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**Scientific and Technical Information  
Output of the Langley Research Center  
for Calendar Year 1983**

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**NASA**

NASA Technical Memorandum 85735

Scientific and Technical Information  
Output of the Langley Research Center  
for Calendar Year 1983

*Compiled by*  
Research Information and Applications Division  
*Langley Research Center*  
*Hampton, Virginia*



National Aeronautics and  
Space Administration

Langley Research Center  
Hampton, Virginia 23665

1984

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## FOREWORD

This report contains a listing of Langley Research Center's scientific and technical research output for calendar year 1983.

The intent of this report is to provide a greater awareness of the broad scope of results and the importance of the research and development work conducted by scientists and engineers at Langley. This current awareness is mandated by the National Aeronautics and Space Act of 1958, which provides for the widest practical dissemination of NASA research.

During the calendar year 1983, Langley's contributions to NASA and non-NASA literature included 157 NASA Formal Reports, 121 Quick-Release Technical Memorandums, 260 Contractor Reports, 168 Journal Articles and Other Publications, 477 Meeting Presentations, 206 Technical Talks, 8 Computer Programs, 136 Tech Briefs, and 28 Patents. In addition, during the year 19 conferences, symposia, and workshops were sponsored or cosponsored by Langley and held locally.

Comments or suggestions concerning this publication should be addressed to the Research Information and Applications Division, Mail Stop 180A, NASA Langley Research Center, Hampton, Virginia 23665.



Jess G. Ross  
Chief, Research Information  
and Applications Division



CONFERENCES SPONSORED OR COSPONSORED BY LANGLEY AND HELD LOCALLY IN 1983

Title of conference	Date	Langley contacts	Langley speakers	Attendees
1. ICASE - Computational Aeroacoustics Workshop	Jan. 3-6	Milton E. Rose	4	52
2. NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop	Jan. 25-26	Perry A. Newman	4	86
3. Finite-Element Modeling Workshop	Feb. 1-4	Robert J. Huston	14	89
4. Langley Conference on Shuttle Performance: Lessons Learned	Mar. 8-10	Jim J. Jones and James P. Arrington	11	287
5. NASA Space Station Technology Workshop	Mar. 28-31	Robert L. Wright and Aubrey G. Price	1	740
6. Symposium on Computer-Aided Geometry Modeling	Apr. 20-22	John N. Shoosmith	5	387
7. NASA Workshop on Tough Composite Materials	May 24-26	Louis F. Vosteen	6	130
8. NASA/ASTM Second United States/Japan Conference on Composite Materials	June 6-8	George L. Roderick	1	168
9. NASA Workshop on Transonic Unsteady Aerodynamics and Aeroelasticity	June 22-23	John W. Edwards	7	97
10. NASA/MSFC Applications of Tethers in Space Workshop	June 15-17	Paul M. Siemers III	3	≈250
11. STEP Experiment Requirements Workshop	June 29 - July 1	Marcus L. Brumfield	10	83
12. Workshop on Advanced Materials/Structures Technology for Rotorcraft	Aug. 17-19	Robert J. Huston	0	45
13. NASA/LARC/OAST Optical Information Processing Conference II	Aug. 30-31	Robert L. Stermer, Jr.	1	88
14. Workshop on TAWFIVE Computer Program	Oct. 20	N. Duane Melson and Craig L. Streett	2	30
15. 1st Annual NASA Aircraft Controls Workshop	Oct. 25-27	Gary P. Beasley	9	130
16. SIAM Conference on Parallel Processing for Scientific Computing	Nov. 10-11	Milton E. Rose	2	≈450
17. NASA/AHS Annual Meeting	Nov. 29 - Dec. 1	Otis S. Childress, Jr.	8	≈60
18. National Transonic Facility Research Symposium	Dec. 5	Jerome T. Foughner, Jr.	13	284
19. NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems	Dec. 13-15	Sidney C. Dixon	14	110
Total . . . . .			115	3566

## INTRODUCTION

The NASA Langley Research Center is one of the Nation's leading laboratories for research and development in the sciences of aeronautics and space technology. Langley conducts basic and applied research in fluid and flight mechanics, structures and materials, acoustics and noise reduction, measurement and instrumentation systems, numerical methods and techniques, data systems, electronics, physics, chemistry, and Earth and space sciences.

This publication is a compilation of Langley's scientific and technical research output for 1983 which is processed through the Center's Research Information and Applications Division, an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. This document is intended as a reference summary for researchers and as a current awareness publication for the scientific, research, and academic community.

The results of Langley's research are disseminated in a variety of NASA and non-NASA scientific and technical media and information systems. Details of the availability of the research references in this document are found in the section, "Availability," on page vii.

The citations are grouped first by Langley Directorates, then by the Langley Office or Division to which the senior author or innovator belongs. Citations are listed alphabetically by author or innovator under the following headings: Formal Reports (Technical Papers, Technical Memorandums, Conference Publications, Reference Publications, and Special Publications), Quick-Release Technical Memorandums, Contractor Reports, Journal Articles and Other Publications, Meeting Presentations, Technical Talks, Computer Programs, Tech Briefs, and Patents. If a citation has more than one author, it is listed only once under the first author's name. The subject category number used to index the citation and the Research Technology Objectives and Plans (RTOP) number are noted below citations when appropriate.

Computer Programs listed are those which were submitted by Langley to COSMIC in 1983.

The NASA Tech Briefs cited have either been published or submitted in 1983 for publication in "NASA Tech Briefs," a quarterly journal for United States industry, entrepreneurs, and academia. Subscriptions to this journal are available through the NASA Technology Utilization Program by writing to the Director, Technology Transfer Division, NASA Scientific and Technical Information, P. O. Box 8757, Baltimore/Washington International Airport, Maryland 21240.

Patents listed, which are owned in whole or in part by Langley Research Center personnel, have been published in issues of "Scientific and Technical Aerospace Reports" (STAR), a NASA announcement journal for report literature. A subscription to STAR is available from the U.S. Government Printing Office (GPO) or to qualified recipients from the NASA Scientific and Technical Information Facility (STIF).

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## AVAILABILITY

<u>Category</u>	<u>Source</u>
Formal Reports	National Technical Information
Quick-Release Technical Memorandums	Service (NTIS)
Contractor Reports	5285 Port Royal Road Springfield, VA 22161
	NASA Scientific and Technical Information Facility (STIF)
	P. O. Box 8757 Baltimore/Washington International Airport, MD 21240
	NASA Industrial Applications Centers (IAC) (See Appendix for addresses of IAC's)
Computer Programs	Computer Software Management and Information Center (COSMIC)
	112 Barrow Hall University of Georgia Athens, GA 30602
Langley Tech Briefs (also Technical Support Packages (TSP's))	Office of Technology Utilization and Applications
	Mail Stop 139A NASA Langley Research Center Hampton, VA 23665
Patents:	
Patent Application Specifications	National Technical Information Service (NTIS)
Printed Copies	Commissioner of Patents and Trademarks U.S. Patent and Trademark Office Washington, DC 20231

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NASA LANGLEY RESEARCH CENTER  
Hampton, Virginia

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PUBLICATIONS FOR OFFICE OF THE DIRECTOR

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

1. Anon.: Langley Test Highlights - 1982. NASA TM-84655, May 1983, 65 p.  
(Avail: NTIS Subject Category 99)
2. Anon.: Research and Technology - 1983 Annual Report of the Langley Research Center. NASA TM-85702, November 1983, 96 p.  
(Avail: NTIS Subject Category 99)

Contractor Reports

3. Adams, Loyce: M-Step Preconditioned Conjugate Gradient Methods. (NAG1-46, NAS1-15810, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172130, April 1983, 31 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
4. Adams, Loyce: An M-Step Preconditioned Conjugate Gradient Method for Parallel Computation. (NAS1-15810, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172150, June 1983, 9 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
5. Adams, Loyce; and Voigt, Robert G.: A Methodology for Exploiting Parallelism in the Finite Element Process. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172219, September 1983, 37 p.  
(Avail: NTIS Subject Category 62 RTOP 505-31-83)
6. Adams, Loyce M.; and Voigt, Robert G.: Design, Development and Use of the Finite Element Machine. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172250, October 1983, 28 p.  
(Avail: NTIS Subject Category 62 RTOP 505-31-83)
7. Anon.: Semiannual Report - October 4, 1982 Through March 31, 1983. (NAS1-15810, NAS1-16394, NAS1-17130, NAS1-14101, NAS1-14472, and NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172267, November 1983, 31 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)



8. Banks, H. T.; and Crowley, J. M.: Parameter Identification in Continuum Models. (NAS1-15810 and NAS1-16394 Institute for Computer Applications in Science and Engineering.) NASA CR-172132, May 1983, 7 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
9. Banks, H. T.; Ito, K.; and Murphy, K. A.: Computational Methods for Estimation of Parameters in Hyperbolic Systems. (NAS1-15810, NAS1-16394, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172234, September 1983, 15 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
10. Banks, H. T.; and Kunisch, K.: The Linear Regulator Problem for Parabolic Systems. (NAS1-15810 and NAS1-16394 Institute for Computer Applications in Science and Engineering.) NASA CR-172176, July 1983, 30 p.  
(Avail: NTIS                      Subject Category 66                      RTOP 505-31-83)
11. Banks, H. T.; and Majda, G.: Modeling of Flexible Surfaces: A Preliminary Study. (NAS1-15810 and NAS1-16394 Institute for Computer Applications in Science and Engineering.) NASA CR-172147, June 1983, 25 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
12. Canuto, Claudio; and Quarteroni, Alfio: Preconditioned Minimal Residual Methods for Chebyshev Spectral Calculations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172157, June 1983, 33 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
13. Chen, Goong; Mills, Wendell H.; Zheng, Quan; and Shaw, Wan-Hua: N-Person Differential Games, Part II: The Penalty Method. (NAS1-15810 Institute for Computer Applications in Science and Engineering.) NASA CR-166111, April 1983, 54 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
14. Chen, Goong; and Zheng, Quan: N-Person Differential Games, Part I: Duality-Finite Element Methods. (NAS1-15810 Institute for Computer Applications in Science and Engineering.) NASA CR-166110, April 1983, 69 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
15. Dadfar, Mohammad B.; Geer, James; and Anderson, Carl M.: Perturbation Analysis of the Limit Cycle of the Free van der Pol Equation. (NAS1-14101 Institute for Computer Applications in Science and Engineering.) NASA CR-172166, June 1983, 32 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
16. Dahlburg, R. B.; Zang, T. A.; Montgomery, D.; and Hussaini, M. Y.: Viscous, Resistive MHD Stability Computed by Spectral Techniques. (NAS1-15810, NAS1-16394, NAG1-109, and NSG-7416 Institute for Computer Applications in Science and Engineering.) NASA CR-172129, March 1983, 29 p.  
(Avail: NTIS                      Subject Category 75                      RTOP 505-31-83)
17. Davis, Stephen F.: A Rotationally Biased Upwind Difference Scheme for the Euler Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172179, July 1983, 52 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)

18. DiPrima, R. C.; and Hall, P.: Complex Eigenvalues for the Stability of Couette Flow. (NAS1-17070 Institute for Computer Applications in Science and Engineering. NASA CR-172251, October 1983, 48 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
19. Dunn, Mark H.; and Hariharan, S. I.: Numerical Computations on One-Dimensional Inverse Scattering Problems. (NAS1-16394, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-166114, April 1983, 17 p.  
(Avail: NTIS                      Subject Category 33                      RTOP 505-31-83)
20. Fix, George J.; and Rose, Milton E.: A Comparative Study of Finite Element and Finite Difference Methods for Cauchy-Riemann Type Equations. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-166113, March 1983, 24 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
21. Flaherty, Joseph E.; and O'Malley, Robert E., Jr.: Numerical Methods for Stiff Systems of Two-Point Boundary Value Problems. (NAS1-15810 and NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-166115, April 1983, 45 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
22. Fleming, Peter: CAD of Control Systems: Application of Nonlinear Programming to a Linear-Quadratic Formulation. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172151, June 1983, 8 p.  
(Avail: NTIS                      Subject Category 31                      RTOP 505-31-83)
23. Fleming, Peter: An Application of Nonlinear Programming to the Design of Regulators Using a Linear-Quadratic Formulation. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172253, October 1983, 26 p.  
(Avail: NTIS                      Subject Category 31                      RTOP 505-31-83)
24. Gannon, Dennis; and Van Rosendale, John: Parallel Architectures for Iterative Methods on Adaptive, Block Structured Grids. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172195, August 1983, 16 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
25. Gatski, T. B.; and Grosch, C. E.: Embedded Cavity Drag in Steady and Unsteady Flows. (NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172275, December 1983, 34 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
26. Giles, Michael: Eigenmode Analysis of Unsteady One-Dimensional Euler Equations. (NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172217, August 1983, 18 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-83)

27. Giles, Michael B.; and Rose, Milton E.: A Numerical Study of the Steady Scalar Convective Diffusion Equation for Small Viscosity. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172231, September 1983, 29 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-83)
28. Goldberg, Moshe; and Tadmor, Eitan: Convenient Stability Criteria for Difference Approximations of Hyperbolic Initial-Boundary Value Problems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172224, September 1983, 29 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
29. Gottlieb, David; and Turkel, Eli: Spectral Methods for Time Dependent Partial Differential Equations. (NAS1-16394 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172241, October 1983, 50 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
30. Gunzburger, M. D.; Nicolaidis, R. A.; and Liu, C. H.: New Discretization and Solution Techniques for Incompressible Viscous Flow Problems. (NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172196, August 1983, 22 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
31. Hall, Philip: On the Stability of the Unsteady Boundary Layer on a Cylinder Oscillating Transversely in a Viscous Fluid. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172216, August 1983, 44 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
32. Hall, Philip: The Evolution Equations for Taylor Vortices in the Small Gap Limit. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172249, October 1983, 16 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
33. Hariharan, S. I.; and Bayliss, A.: Radiation of Sound From Unflanged Cylindrical Ducts. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172171, July 1983, 29 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
34. Hariharan, S. I.; and Lester, Harold C.: Acoustic Shocks in a Variable Area Duct Containing Near Sonic Flows. (NAS1-17130 and NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172274, December 1983, 20 p.  
(Avail: NTIS Subject Category 71 RTOP 505-31-83)
35. Hariharan, S. I.; and MacCamy, R. C.: Low Frequency Acoustic and Electromagnetic Scattering. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172203, August 1983, 27 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)

36. Hussaini, M. Y.; Salas, M. D.; and Zang, T. A.: Spectral Methods for Inviscid, Compressible Flows. (NAS1-16394 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172170, July 1983, 39 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-83)
37. Hussaini, M. Yousuff; Streett, Craig L.; and Zang, Thomas A.: Spectral Methods for Partial Differential Equations. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172248, August 1983, 63 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
38. Ito, Kazufumi; and Teglus, Russell: Legendre-Tau Approximations for Functional Differential Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172155, June 1983, 45 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
39. Kopriva, David A.; Zang, Thomas A.; Salas, M. D.; and Hussaini, M. Y.: Pseudospectral Solution of Two-Dimensional Gas-Dynamic Problems. (NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172230, September 1983, 17 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-83)
40. LeVeque, Randall J.; and Trefethen, Lloyd N.: On the Resolvent Condition in the Kreiss Matrix Theorem. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172177, July 1983, 14 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
41. Mehrotra, Piyush; and Pratt, Terrence W.: A Model for the Distributed Storage and Processing of Large Arrays. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172252, October 1983, 51 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
42. Moss, William F.: Spinning Mode Acoustic Radiation From The Flight Inlet. (NAS1-16394 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172273, November 1983, 32 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
43. Napolitano, M.; and Dadone, A.: Three-Dimensional Implicit Lambda Methods. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172264, October 1983, 22 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-83)
44. Osher, Stanley; and Chakravarthy, Sukumar: High Resolution Schemes and the Entropy Condition. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172218, September 1983, 63 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
45. Phillips, Timothy N.: Numerical Solution of a Coupled Pair of Elliptic Equations From Solid State Electronics. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172128, January 1983, 20 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)

46. Phillips, Timothy N.: Natural Convection in an Enclosed Cavity. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-166112, February 1983, 26 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
47. Phillips, Timothy N.: A Preconditioned Formulation of the Cauchy-Riemann Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172156, June 1983, 15 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
48. Phillips, T. N.; and Rose, M. E.: A Compact Finite Difference Scheme for  $\text{div}(\rho \text{ grad } u) - q^2 u = 0$ . (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172165, June 1983, 21 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
49. Phillips, T. N.; Zang, T. A.; and Hussaini, M. Y.: Preconditioners for the Spectral Multigrid Method. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172202, September 1983, 33 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
50. Pratt, Terrence W.; Adams, Loyce M.; Mehrotra, Piyush; Van Rosendale, John; Voigt, Robert G.; and Patrick, Merrell: The FEM-2 Design Method. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172197, August 1983, 12 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
  
51. Rose, Milton E.: Restricted Maximum Principles for Elastic Bodies. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172255, October 1983, 7 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-31-83)
  
52. Spencer, John H. (Compiler): American Society for Engineering Education/NASA Summer Faculty Fellowship. (NGT 47-020-800 Hampton Institute.) NASA CR-166016, February 1983, 118 p.  
(Avail: NTIS                      Subject Category 80)
  
53. Sritharah, S. S.; and Seebass, Richard: Finite Area Method for Nonlinear Supersonic Conical Flows. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172148, June 1983, 36 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-83)
  
54. Staff of ICASE: Cumulative Reports and Publications Thru December 31, 1982. (NAS1-15810 and NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-166116, April 1983, 25 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
  
55. Tadmor, Eitan: Finite-Difference, Spectral and Galerkin Methods for Time-Dependent Problems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172149, June 1983, 57 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)

56. Tadmor, Eitan: The Large-Time Behavior of the Scalar, Genuinely Nonlinear Lax-Friedrichs Scheme. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172138, June 1983, 32 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
57. Tadmor, Eitan: Entropy Functions for Symmetric Systems of Conservation Laws. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172139, June 1983, 9 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
  
58. Tadmor, Eitan: Numerical Viscosity and the Entropy Condition for Conservative Difference Schemes. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172141, June 1983, 28 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
59. Teglas, Russell: On the Control Canonical Structure of a Class of Scalar Input Systems. (NAS1-15810 Institute for Computer Applications in Science and Engineering.) NASA CR-172140, June 1983, 38 p.  
(Avail: NTIS                      Subject Category 63                      RTOP 505-31-83)
  
60. Van Leer, Bram: Computational Methods for Ideal Compressible Flow. (NAS1-15810 Institute for Computer Applications in Science and Engineering.) NASA CR-172180, July 1983, 34 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
61. Van Leer, Bram: Multidimensional Explicit Difference Schemes for Hyperbolic Conservation Laws. (NAS1-15810 Institute for Computer Applications in Science and Engineering.) NASA CR-172254, November 1983, 7 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
  
62. Van Rosendale, John: Minimizing Inner Product Data Dependencies in Conjugate Gradient Interaction. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172178, July 1983, 12 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
  
63. Van Rosendale, John: Algorithms and Data Structures for Adaptive Multigrid Elliptic Solvers. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172158, June 1983, 33 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
  
64. Zang, T. A.; Kopriva, D. A.; and Hussaini, M. Y.: Pseudospectral Calculations of Shock Turbulence Interactions. (NAG1-109, NAS1-16394, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172133, May 1983, 13 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-31-83)
  
65. Zang, T. A.; Wong, Y. S.; and Hussaini, M. Y.: Spectral Multigrid Methods for Elliptic Equations II. (NAG1-109, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172131, May 1983, 33 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)

#### Journal Articles and Other Publications

No journal articles and other publications.

#### Meeting Presentations

No meeting presentations.

#### Technical Talks

66. Hearth, Donald P.: The Challenge of Large Space Systems. Presented at the 1983 AIAA Annual Meeting and Technical Display, May 10, 1983, Long Beach, California.  
(Subject Category 15      RTOP 506-62-23)
67. Lee, Robert B., III; Jackson, Mary Winston; and Merritt, Vivian Baptist: 1973-1982 Minority and Women Trends in Undergraduate Engineering Enrollments and Bachelor Degrees. Presented at the 55th Annual Convention of the National Technical Association, July 25-30, 1983, Orlando, Florida.  
(Subject Category 80      RTOP 023-10-08)

#### Computer Programs

No computer programs.

#### Tech Briefs

No tech briefs.

#### Patents

68. Lee, Ja H.; and Hohl, Frank: Solar Driven Liquid Metal MHD Power Generator. U.S. Patent 4,388,542. Issued June 14, 1983.  
(Subject Category 44)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR PROJECTS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

69. Wright, Howard T.: NASA Technology Program for Future Civil Air Transports. Presented at the AIAA/ASCE/ATRIF/TRB/CASI International Air Transportation Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1603.  
(Subject Category 05 RTOP 534-02-13)

Technical Talks

70. Wright, Howard T.: Role of Government/NASA Participation in Aeronautics Research. Presented at the 1983 NASA/ASEE Summer Faculty Research Program Lecture Series, June 21, 1983, Hampton, Virginia.  
(Subject Category 05 RTOP 534-02-13)

Computer Programs

No computer programs.

Tech Briefs

71. Wood, Darrell A.: Resource Escalation and Cost Analysis. NASA Tech Brief LAR-13018.



PUBLICATIONS FOR AERONAUTICAL SYSTEMS OFFICE

Formal Reports

72. Hoffman, Sherwood; and Varholic, Mary C.: Contracts, Grants, and Funding Summary of Supersonic Cruise Research and Variable-Cycle Engine Technology Programs - 1972-1982. NASA TM-85650, September 1983, 79 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
73. Williams, Louis J.: Small Transport Aircraft Technology. NASA SP-460, 1983, 118 p.  
(Avail: NTIS Subject Category 05 RTOP 533-01-43)

Quick-Release Technical Memorandums

74. Johnson, Vicki S.: Comparison of Advanced Turboprop and Turbofan Airplanes. NASA TM-85692, September 1983, 29 p.  
(Avail: NTIS Subject Category 05 RTOP 505-43-43)
75. Johnson, Vicki S.; and Haddock, Susan N.: A Study of Vehicle Geometry Development in the Rockwell Configuration Development System. NASA TM-85709, November 1983, 100 p.  
(Avail: STIF Subject Category 05 RTOP 505-43-43)
76. Liu, Grace C.; Morris, Charles E. K., Jr.; and Koenig, Robert W.: Performance of High-Altitude, Long-Endurance, Turboprop Airplanes Using Conventional or Cryogenic Fuels. NASA TM-84534, January 1983, 53 p.  
(Avail: NTIS Subject Category 05 RTOP 505-43-43)
77. Maksymiuk, Catherine M.; and Watson, Sally A.: A Computer Program for Estimating the Aerodynamic Characteristics of NACA 16-Series Airfoils. NASA TM-85696, September 1983, 117 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
78. Spearman, M. Leroy: Effect of External Stores on the Stability and Control Characteristics of a Delta Wing Fighter Model at Mach Numbers From 0.60 to 2.01. NASA TM-84596, January 1983, 37 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
79. Spearman, M. Leroy: The Minimization of Pylon-Mounted Store Effects on Air Combat Capability. NASA TM-84597, January 1983, 16 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
80. Spearman, M. Leroy: The Role of Wind Tunnels in Predicting Sounding Rocket Aerodynamics. NASA TM-84599, January 1983, 10 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
81. Spearman, M. Leroy: Supersonic Aerodynamic Characteristics of a Tail-Control Cruciform Maneuverable Missile With and Without Wings. NASA TM-84600, January 1983, 12 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)

82. Spearman, M. Leroy: Effects of Wing and Tail Location on the Aerodynamic Characteristics of an Airplane for Mach Numbers From 0.25 to 4.63. NASA TM-84643, March 1983, 29 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)
83. Spearman, M. Leroy: An Aerodynamic Assessment of Various Supersonic Fighter Airplanes Based on Soviet Design Concepts. NASA TM-84647, March 1983, 24 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)
84. Spearman, M. Leroy: An Aerodynamic Assessment of Various Missile Configuration Concepts. NASA TM-84651, March 1983, 35 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)
85. Spearman, M. Leroy: Some Historical Trends in the Research and Development of Aircraft. NASA TM-84665, April 1983, 14 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-43-43)
86. Spearman, M. Leroy: Historical Development of Worldwide Supersonic Aircraft. NASA TM-85637, May 1983, 39 p.  
(Avail: NTIS                      Subject Category 99                      RTOP 505-43-43)
87. Spearman, M. Leroy: Historical Development of Worldwide Guided Missiles. NASA TM-85658, June 1983, 36 p.  
(Avail: NTIS                      Subject Category 99                      RTOP 505-43-43)
88. Spearman, M. Leroy: An Overview of Aerodynamic Research and Technology Requirements as Related to Some Military Needs. NASA TM-85691, November 1983, 14 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-43-43)
89. Spearman, M. Leroy: Some Thoughts Concerning Large Load-Carrying Vehicles. NASA TM-85701, November 1983, 24 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-43-43)
90. Supersonic Cruise and Maneuver Study Group: Final Report of the Study Group on Supersonic Cruise and Maneuver. NASA TM-84603, February 1983, 147 p.  
(Avail: STIF                      Subject Category 01                      RTOP 505-43-43)

#### Contractor Reports

91. Beissner, F. L.; Lovell, W. A.; Robins, A. Warner; and Swanson, E. E.: Effect of Advanced Technology and a Fuel-Efficient Engine on a Supersonic-Cruise Executive Jet With a Small Cabin. (NAS1-16000 Kentron International, Inc.) NASA CR-172190, August 1983, 57 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-43-53)
92. Herring, R. N.; and Miller, D. H.: Study of Potential for Sustained Cruise Military Aircraft Utilizing Advanced Technologies. (NAS1-16647 McDonnell Aircraft Company.) NASA CR-172222, October 1983, 120 p.  
(Avail: STIF                      Subject Category 05                      RTOP 505-43-43)

93. Robins, A. Warner; Beissner, Fred L.; Lovell, William A.; Price, Jack E.; Turriziani, R. Victor; and Washburn, Fred F.: Application of Variable-Sweep Wings to Commuter Aircraft. (NAS1-16000 Kentron International, Inc.) NASA CR-166067, February 1983, 29 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-43-43)
94. Staff of Boeing Commercial Airplane Company: Studies of Advanced Supersonic Technologies. (NAS1-16150 Boeing Commercial Airplane Company.) NASA CR-166076, June 1983, 428 p.  
(Avail: STIF                      Subject Category 01                      RTOP 505-43-43)

#### Journal Articles and Other Publications

95. Morris, Charles E. K., Jr.: Unmanned, High-Altitude, Long-Endurance Platforms. Unmanned Systems, Volume 2, No. 1, Summer 1983, p. 13-15, 38.  
(Subject Category 05                      RTOP 505-43-43)
96. Muehlbauer, J. C.; and Morris, S. J., Jr.: Advanced Turboprop Cargo Aircraft System Study. Journal of Aircraft, Volume 20, No. 6, June 1983, p. 523-529.  
(Subject Category 02                      RTOP 505-43-43)
97. Spearman, M. Leroy: Guided Missiles. Encyclopedia of Science and Technology, 5th Edition, McGraw-Hill Book Co., Volume 6, 1983, p. 409-412.  
(Subject Category 02                      RTOP 505-43-43)

#### Meeting Presentations

98. Driver, Cornelius: Progress in Supersonic Cruise Technology. Presented at the AGARD Flight Mechanics Panel Symposium on Technology for Sustained Supersonic Cruise and Maneuver, October 10-14, 1983, Brussels, Belgium. AGARD CP-358.  
(Subject Category 05                      RTOP 505-43-43)
99. Johnson, Vicki S.: Parametric Study of Factors Affecting the Fuel Efficiency of Advanced Turboprop Airplanes. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1823.  
(Subject Category 05                      RTOP 505-43-43)
100. Morris, Charles E. K., Jr.: Design Study for Remotely Piloted, High-Altitude Airplanes Powered by Microwave Energy. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1825.  
(Subject Category 05                      RTOP 505-43-43)
101. Morris, Charles E. K., Jr.: A Design Study of High-Altitude, Unmanned, Microwave-Powered Aircraft. Presented at the 10th Annual Association for Unmanned Vehicle Systems - (AUVS-83) Symposium, June 28-30, 1983, Salt Lake City, Utah.  
(Subject Category 05                      RTOP 505-43-43)

102. Spearman, M. Leroy: An Overview of the Potential Threat as Related to Missile Requirements. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0568. (Subject Category 01 RTOP 505-43-33)
103. Spearman, M. Leroy: Some Lessons from NACA/NASA Aerodynamic Studies Following World War II. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1856. (Subject Category 01 RTOP 505-43-43)
104. Spearman, M. Leroy: Scientific and Technical Training in the Soviet Union. Presented at the AIAA/AHS 1983 Aircraft Design, Systems, and Operations Meeting and Technical Display, October 17-19, 1983, Fort Worth, Texas. AIAA Paper No. 83-2520. (Subject Category 01 RTOP 505-43-43)

#### Technical Talks

105. Driver, Cornelius: Revolution and Evolution in Air Transportation. Presented at the Washington, D.C., Chapter Meeting of the American Society of Civil Engineers, March 31, 1983, Washington D.C. (Subject Category 01 RTOP 505-43-43)
106. Driver, Cornelius: Progress in Supersonic Cruise Technology. Presented at the Aerodynamics Institute Seminar on Supersonic Transport Technology, October 14, 1983, Aachen, West Germany. (Subject Category 02 RTOP 505-43-43)
107. Driver, Cornelius: STOL Research at the NASA Langley Research Center. Presented at the NASA/DOD/UK, U.S./UK STOL/STOVL Seminar, June 6-8, 1983, Farnborough, England. (Subject Category 05 RTOP 505-43-43)
108. Koenig, Robert W.: Technical Factors: Forecasts for U. S. Regional Aircraft Requirements. Presented at the 1983 Transportation Research Board Annual General Meeting, Committee on Economics of Air Transportation, January 17-21, 1983, Washington, DC. (Subject Category 01 RTOP 505-43-43)
109. Morris, C. E. K., Jr.: High-Altitude, Long-Endurance UVS; NASA Studies of Chemical Fuel and Microwave Power. Presented at the National Capital Chapter of the Association for Unmanned Vehicle Systems (AUVS) Symposium on Status of Unmanned Vehicle Technology and Its Application to Military Problems, April 14, 1983, Laurel, Maryland. (Subject Category 26 RTOP 505-33-13)
110. Morris, Charles E. K., Jr.: NASA Activities on High-Altitude Long-Endurance Aircraft. Presented at the Defense Science Board Sub-Panel of Task Force on Long Endurance Aircraft, September 19, 1983, Washington, DC. (Subject Category 05 RTOP 505-43-43)

#### Computer Programs

No computer programs.

#### Tech Briefs

111. Carlson, H. W.; and Walkley, K. B. (Kentron International, Inc.): Wing Subsonic Aerodynamic Performance Estimates. NASA Tech Brief LAR-12987.

#### Patents

No patents.

PUBLICATIONS FOR SPACE TECHNOLOGY FLIGHT EXPERIMENTS OFFICE

Formal Reports

112. Lightner, E. Burton (Compiler): Large Space Antenna Systems Technology -  
1982, Part 1. NASA CP-2269, May 1983, 596 p.  
(Avail: NTIS                      Subject Category 15                      RTOP 506-62-23)
113. Lightner, E. Burton (Compiler): Large Space Antenna Systems Technology -  
1982, Part 2. NASA CP-2269, May 1983, 468 p.  
(Avail: NTIS                      Subject Category 15                      RTOP 506-62-23)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR SCOUT PROJECT OFFICE

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

114. Myler, T. R. (Vought Corporation): Elliptical Orbit Performance Computer Program. NASA Tech Brief LAR-13026.

Patents

No patents.

PUBLICATIONS FOR AIRCRAFT ENERGY EFFICIENCY PROJECT OFFICE

Formal Reports

115. ACEE Composites Project Office (Compiler): Standard Tests for Toughened Resin Composites - Revised Edition. NASA RP-1092, July 1983, 38 p.  
(Avail: NTIS Subject Category 24 RTOP 534-03-13)

Quick-Release Technical Memorandums

116. Bohon, H. L.; Chapman, A. J., III; and Leybold, H. A.: Ground Test Experience With Large Composite Structures for Commercial Transports. NASA TM-84627, March 1983, 21 p.  
(Avail: NTIS Subject Category 39 RTOP 534-03-13)
117. Fischer, M. C.; Wright, A. S., Jr.; and Wagner, R. D.: A Flight Test of Laminar Flow Control Leading-Edge Systems. NASA TM-85712, December 1983, 16 p.  
(Avail: NTIS Subject Category 01 RTOP 505-45-63)
118. Maddalon, Dal V.; and McMillin, Mark L.: Effect of Surface Waviness on a Supercritical Laminar-Flow-Control Airfoil. NASA TM-85705, October 1983, 24 p.  
(Avail: IAC Subject Category 02 RTOP 534-01-13)

Contractor Reports

119. Aniversario, R. B.; Harvey, S. T.; McCarty, J. E.; Parsons, J. T.; Peterson, D. C.; Pritchett, L. D.; Wilson, D. R.; and Wogulis, E. R.: Full-Scale Testing, Production, and Cost Analysis Data for the Advanced Composite Stabilizer for Boeing 737 Aircraft, Volume I - Technical Summary. (NAS1-15025 Boeing Commercial Airplane Company.) NASA CR-3649, April 1983, 40 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)
120. Aniversario, R. B.; Harvey, S. T.; McCarty, J. E.; Parsons, J. T.; Peterson, D. C.; Pritchett, L. D.; Wilson, D. R.; and Wogulis, E. R.: Design, Ancillary Testing, Analysis, and Fabrication Data for the Advanced Composite Stabilizer for Boeing 737 Aircraft, Volume I - Technical Summary. (NAS1-15025 Boeing Commercial Airplane Company.) NASA CR-3648, April 1983, 66 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)
121. Bunin, B. L.: Critical Composite Joint Subcomponents - Analysis and Test Results. (NAS1-16857 McDonnell Douglas Corporation.) NASA CR-3711, September 1983, 158 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)



122. Dow, N. F.; Humphreys, E. A.; and Rosen, B. W.: Guidelines for Composite Materials Research Related to General Aviation Aircraft. (NAS1-16804 Materials Sciences Corporation.) NASA CR-3720, September 1983, 226 p.  
(Avail: NTIS Subject Category 24 RTOP 505-33-33)
123. Griffin, Charles F.: Fuel Containment and Damage Tolerance in Large Composite Primary Aircraft Structures. (NAS1-16856 Lockheed-California Company.) NASA CR-166083, March 1983, 13 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)
124. Nelson, Willard D.; Bunin, Bruce L.; and Hart-Smith, Leonard John: Critical Joints in Large Composite Aircraft Structure. (NAS1-16857 McDonnell Douglas Corporation.) NASA CR-3710, August 1983, 42 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)
125. Palmer, J. M., Jr.; Stephens, C. O.; and Sutton, J. O.: DC-10 Composite Vertical Stabilizer Ground Test Program. (NAS1-14869 McDonnell Douglas Corporation.) NASA CR-3715, August 1983, 38 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)
126. Sandifer, J. P.: Fuel Containment and Damage Tolerance for Large Composite Primary Aircraft Structures, Phase I - Testing. (NAS1-16856 Lockheed-California Company.) NASA CR-166091, March 1983, 538 p.  
(Avail: IAC Subject Category 24 RTOP 534-03-13)
127. Shollenberger, Carl A.; Humphreys, John W.; Heiberger, Frank S.; and Pearson, Robert M.: Results of Winglet Development Studies for DC-10 Derivatives. (NAS1-15327 McDonnell Douglas Corporation.) NASA CR-3677, March 1983, 174 p.  
(Avail: IAC Subject Category 05 RTOP 534-02-13)
128. Staff of Boeing Commercial Airplane Company: Integrated Application of Active Controls (IAAC) Technology to an Advanced Subsonic Transport Project--Longitudinal Handling Qualities Study of a Relaxed-Stability Airplane. (NAS1-15325 Boeing Commercial Airplane Company.) NASA CR-3660, January 1983, 68 p.  
(Avail: IAC Subject Category 08 RTOP 534-02-13)
129. Staff of Boeing Commercial Airplane Company: Integrated Application of Active Controls (IAAC) Technology to an Advanced Subsonic Transport Project - Test ACT System Description. (NAS1-15325 Boeing Commercial Airplane Company.) NASA CR-172221, December 1983, 271 p.  
(Avail: IAC Subject Category 05 RTOP 534-02-13)
130. Staff of Boeing Commercial Airplane Company: Aircraft Surface Coatings - Summary Report. (NAS1-14742 and NAS1-15325 Boeing Commercial Airplane Company.) NASA CR-3661, January 1983, 38 p.  
(Avail: IAC Subject Category 05 RTOP 534-02-13)
131. Staff of Douglas Aircraft Company: DC-10 Winglet Flight Evaluation. (NAS1-15327 McDonnell Douglas Corporation.) NASA CR-3704, June 1983, 156 p.  
(Avail: IAC Subject Category 05 RTOP 534-02-13)

132. Stone, R. H.: Flight Service Evaluation of Advanced Composite Ailerons on the L-1011 Transport Aircraft - First Annual Flight Service Report. (NAS1-15069 Lockheed-California Company.) NASA CR-172246, September 1983, 10 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 534-06-13)
133. Taylor, A. B.: DC-10 Winglet Flight Evaluation Summary Report. (NAS1-15327 McDonnell Douglas Corporation.) NASA CR-3748, December 1983, 68 p.  
(Avail: IAC                      Subject Category 05                      RTOP 534-02-13)

#### Journal Articles and Other Publications

No journal articles and other publications.

#### Meeting Presentations

134. Fischer, Michael C.; Wright, Andrew S., Jr.; and Wagner, Richard D.: A Flight Test of Laminar Flow Control Leading Edge Systems. Presented at the AIAA/AHS 1983 Aircraft Design, Systems, and Operations Meeting and Technical Display, October 17-19, 1983, Ft. Worth, Texas. AIAA Paper No. 83-2508.  
(Subject Category 05                      RTOP 534-01-13)
135. Wagner, Richard D.; and Fischer, Michael C.: Developments in the NASA Transport Aircraft Laminar Flow Program. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0090.  
(Subject Category 02                      RTOP 505-31-03)

#### Technical Talks

136. Chapman, Andrew J.; and Bohon, Herman L.: Application of Composites to Transport Aircraft Structures. Presented at the Society of Experimental Stress Analysis 1983 Fall Meeting, November 7-9, 1983, Salt Lake City, Utah.  
(Subject Category 39                      RTOP 534-06-13)
137. Davis, John G.: Trends and Directions of Composite Application in the Aerospace Industry. Presented at the Goodyear Aerospace Corporation Symposium on Composite Materials, May 2-3, 1983, Akron, Ohio.  
(Subject Category 39                      RTOP 534-03-13)

#### Computer Programs

No computer programs.

#### Tech Briefs

138. Bono, Philip (McDonnell Douglas Corporation): Thermal Balance Strip for Fluted LFC Panels. NASA Tech Brief LAR-12991.

#### Patents

No patents.

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR ELECTRONICS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR ANALYSIS AND COMPUTATION DIVISION

Formal Reports

139. Craidon, Charlotte B.: User's Guide for a Computer Program for Calculating the Zero-Lift Wave Drag of Complex Aircraft Configurations. NASA TM-85670, November 1983, 65 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
140. Houck, Jacob A.: Simulation Study of Crew Performance in Operating an Advanced Transport Aircraft in an Automated Terminal Area Environment. NASA TM-84610, May 1983, 65 p.  
(Avail: NTIS                      Subject Category 04                      RTOP 534-04-13)

Quick-Release Technical Memorandums

141. Taylor, Nancy L.: Guidelines in Preparing Computer-Generated Plots for NASA Technical Reports With the LaRC Graphics Output System. NASA TM-81908 (Revised), August 1983, 111 p. (Supersedes NASA TM-81908, November 1980.)  
(Avail: NTIS                      Subject Category 61                      RTOP 992-16-05)

Contractor Reports

142. DeLoatch, Sandra Jean: MACSYMA User's Guide. (NAS1-16921 Norfolk State University.) NASA CR-166059, January 1983, 72 p.  
(Avail: STIF                      Subject Category 59                      RTOP 505-31-83)
143. Mall, Gerald H.: Improvements to the FATOLA Computer Program Including Added Actively Controlled Landing Gear Subroutines. (NAS1-16078 Computer Sciences Corporation.) NASA CR-166069, April 1983, 218 p.  
(Avail: IAC                      Subject Category 05                      RTOP 505-45-23)

Journal Articles and Other Publications

144. Anderson, T.; and Knight, J. C.: A Framework for Software Fault Tolerance in Real-Time Systems. IEEE Transactions on Software Engineering, Volume SE-9, No. 3, May 1983, p. 355-364.  
(Subject Category 61                      RTOP 505-31-83)
145. Collins, W. R.; Noonan, R. E.; Gregory, S. T.; Knight, J. C.; and Hamm, R. W.: MYSTRO: A Comprehensive Translator Writing System. Software Practice and Experience, Volume 13, No. 5, May 1983, p. 447-451.  
(Subject Category 61                      RTOP 506-61-13)
146. Park, Stephen K.; and Schowengerdt, Robert A.: Image Reconstruction by Parametric Cubic Convolution. Computer Vision, Graphics, and Image Processing, Volume 23, 1983, p. 258-272.  
(Subject Category 74                      RTOP 505-31-83)

147. Shoosmith, John N.; and Fulton, Robert E.: Guest Editors' Introduction: Computer-Aided Geometry Modeling: A Key to Effective Use of Computers in Science and Engineering. IEEE Computer Graphics and Applications, Volume 3, No. 7, October 1983, p. 6-7.  
(Subject Category 59 RTOP 505-31-83)

#### Meeting Presentations

148. Lambiotte, Jules J., Jr.: Efficient Sparse Matrix Multiplication Scheme for the CYBER-203. Presented at the NASA/Goddard-CDC CYBER-200 Applications Seminar, October 10-12, 1983, Lanham, Maryland. Proceedings Pending.  
(Subject Category 61 RTOP 505-31-83)
149. Schiess, James R.; and Matthews, Christine G.: Spline Method for Generating Continuous Random Variables. Presented at the 1983 ORSA/TIMS Joint National Meeting, November 7-9, 1983, Orlando, Florida.  
(Subject Category 65 RTOP 505-31-83)
150. Schiess, James R.; and Matthews, Christine G.: Aspects of Simulation With Continuous Random Variables. Presented at the 1983 ORSA/TIMS Joint National Meeting, November 7-9, 1983, Orlando, Florida.  
(Subject Category 65 RTOP 505-31-83)
151. Schiess, James R.; and Matthews, Christine G.: Spline Approximation of Quantile Functions. Presented at the American Statistical Association/et al., 1983 Joint Statistical Meetings, August 15-18, 1983, Toronto, Canada. Statistical Computing Section Proceedings Volume Pending.  
(Subject Category 65 RTOP 505-31-83)
152. Schowengerdt, R. A.; Park, S. K.; and Gray, R. T.: An Optimized Cubic Interpolator for Image Resampling. Presented at the Environmental Research Institute of Michigan 17th International Symposium on Remote Sensing of Environment, May 9-13, 1983, Ann Arbor, Michigan. Paper No. F-9. Proceedings Pending.  
(Subject Category 61 RTOP 505-31-83)
153. Senn, Edmond H.; Ames, Kathy R.; and Smith, Kathryn A.: Integrated Verification and Testing System (IVTS) for HAL/S Programs. Presented at the IEEE/NBS/ACM SOFTFAIR, Conference on Software Development Tools, July 25-28, 1983, Arlington, Virginia.  
(Subject Category 61 RTOP 505-37-23)
154. Smith, R. E., Jr.: Algebraic Mesh Generation for Large-Scale Viscous-Compressible Aerodynamic Simulation. Presented at the University of Wisconsin, Math Science Center/U.S. Army Conference on Large Scale Scientific Computation, May 17-19, 1983, Madison, Wisconsin. Proceedings Pending.  
(Subject Category 59 RTOP 505-31-83)
155. Smith, Robert E.; Jr.: Three-Dimensional Algebraic Grid Generation. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1904-CP.  
(Subject Category 59 RTOP 505-31-83)

156. Smith, R. E., Jr.; Kudlinski, R. A.; and Pitts, J. I.: Surface Grid Generation for Wing-Fuselage Bodies. Presented at the Symposium on Computer-Aided Geometry Modeling, April 20-22, 1983, Hampton, Virginia. In NASA CP-2272.  
(Subject Category 59      RTOP 505-31-83)
157. Smith, R. E., Jr.; Speray, D. E.; and Everton, E. L.: Visualization of Computer-Generated Flow Fields. Presented at the University of Michigan/ASME/et al., Third International Symposium on Flow Visualization, September 6-9, 1983, Ann Arbor, Michigan. In Proceedings.  
(Subject Category 59      RTOP 505-31-83)
158. Young, Joseph W.: Integration of the LCN/RHF and MASSTOR M860 into the NASA Langley Scientific Computer Complex. Presented at the VIM 39 Conference, October 4, 1983, St. Paul, Minnesota. Proceedings Pending.  
(Subject Category 62      RTOP 505-31-83)

#### Technical Talks

159. Abolhassani, J. S.; Smith, R. E., Jr.; and Tiwari, S. N.: Stiffness Characteristics and the Application of the Method of Lines on Nonuniform Grids. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 59      RTOP 505-31-83)
160. Lambiotte, Jules J., Jr.: Sparse Matrix-Vector Multiplication Software for a Vector Computer. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 64      RTOP 505-31-83)
161. Saunders, Bonita V.; Smith, Robert E., Jr.; and Smith, Philip: Smooth External Patched Grid Generation. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 59      RTOP 505-31-83)
162. Smith, Robert E., Jr.; and Kudlinski, Robert A.: Surface Grid Spacing Control for Aerodynamic Configurations. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 59      RTOP 505-31-83)

#### Computer Programs

No computer programs.

#### Tech Briefs

No tech briefs.

#### Patents

No patents.

PUBLICATIONS FOR INSTRUMENT RESEARCH DIVISION

Formal Reports

163. Chapin, William G.: Dynamic-Pressure Measurements Using an Electronically Scanned Pressure Module. NASA TM-84650, July 1983, 22 p.  
(Avail: NTIS Subject Category 35 RTOP 505-31-53)
164. Houghton, William M.: Measurements of Spectral Attenuation Coefficients in the Lower Chesapeake Bay. NASA TP-2130, April 1983, 35 p.  
(Avail: NTIS Subject Category 48 RTOP 506-61-73)
165. Singh, Jag J.; Davis, William T.; and Mall, Gerald H.: Development of a Nuclear Technique for Monitoring Levels in Pressurized Vessels. NASA TM-85651, September 1983, 33 p.  
(Avail: NTIS Subject Category 35 RTOP 505-33-53)
166. Singh, Jag J.; Davis, William T.; and Puster, Richard L.: Proposed Fast-Response Oxygen Monitoring and Control System for the Langley 8-Foot High-Temperature Tunnel. NASA TP-2218, November 1983, 28 p.  
(Avail: NTIS Subject Category 35 RTOP 505-33-53)
167. Tripp, John S.: Development of a Distributed-Parameter Mathematical Model for Simulation of Cryogenic Wind Tunnels. NASA TP-2177, September 1983, 50 p.  
(Avail: NTIS Subject Category 66 RTOP 505-31-53)

Quick-Release Technical Memorandums

168. Bolt, Pamela A.; Hess, Robert W.; and Davis, William T.: Portable Dynamic Pressure Generator for Static and Dynamic Calibration of In Situ Pressure Transducers. NASA TM-85687, August 1983, 14 p.  
(Avail: NTIS Subject Category 35 RTOP 505-33-43)
169. Burner, A. W.; Snow, W. L.; and Goad, W. K.: Video Model Deformation System for the National Transonic Facility. NASA TM-85681, August 1983, 23 p.  
(Avail: NTIS Subject Category 35 RTOP 505-31-53)
170. Crouch, Roger K.; Fripp, Archibald L.; Debnam, William J.; and Clark, Ivan O.: Experiment Requirements and Implementation Plan (ERIP) for Semiconductor Materials Growth in Low-G Environment. NASA TM-85698, September 1983, 30 p.  
(Avail: NTIS Subject Category 27 RTOP 179-80-70)
171. Crouch, R. K.; Fripp, A. L.; Debnam, W. J.; Clark, I. O.; Zweiner, J. W.; and Carlson, F. M.: Characterization of the General Purpose Research Furnace for Low-G Directional Solidification Experiments. NASA TM-85718, November 1983, 24 p.  
(Avail: NTIS Subject Category 14 RTOP 542-03-30)



172. Faulcon, Nettie D.: Handbook on Comtal's Image Processing System. NASA TM-85671, July 1983, 55 p.  
(Avail: NTIS                      Subject Category 35                      RTOP 505-31-53)
173. Gibbens, Barry V.: A Technique for Dynamically Calibrating Pressure Transducers at Cryogenic Temperatures. NASA TM-85695, October 1983, 17 p.  
(Avail: NTIS                      Subject Category 35                      RTOP 505-31-53)
174. Schutte, Paul C.: A Ground Test Measurement System for the Shuttle Entry Air Data System. NASA TM-85707, October 1983, 28 p.  
(Avail: NTIS                      Subject Category 14                      RTOP 506-63-32)
175. Singh, Jag J.; and Sprinkle, Danny R.: A New Technique for Measuring Gas Conversion Factors for Hydrocarbon Mass Flowmeters. NASA TM-85676, August 1983, 14 p.  
(Avail: NTIS                      Subject Category 35                      RTOP 505-33-53)

#### Contractor Reports

176. Botez, D.; and Ladany, I.: AlGaAs Single-Mode Stability. (NAS1-15440 RCA Laboratories.) NASA CR-3719, August 1983, 38 p.  
(Avail: NTIS                      Subject Category 36                      RTOP 506-54-13)
177. Koch, T. L.; Gerardis, E. M.; and Thom, R. D.: Mercury Cadmium Telluride (HgCdTe) Monolithic Charge Coupled Infrared Imaging Arrays. (NAS1-16384 Santa Barbara Research Center.) NASA CR-166064, March 1983, 121 p.  
(Avail: STIF                      Subject Category 35                      RTOP 323-51-61)

#### Journal Articles and Other Publications

178. Clark, I. O.; Fripp, A. L.; Debnam, W. J.; Crouch, R. K.; and Brewer, W. D.: Solutal Diffusion Coefficient for Liquid PbTe-SnTe. Journal of the Electrochemical Society, Volume 130, No. 1, January 1983, p. 164-165.  
(Subject Category 23                      RTOP 179-80-10)
179. Deepak, Adarsh; and Adams, Richard R.: Photography and Photographic-Photometry of the Solar Aureole. Applied Optics, Volume 22, No. 11, June 1, 1983, p. 1646-1654.  
(Subject Category 35                      RTOP 665-40-40)
180. Exton, R. J.; Houghton, W. M.; Esaias, W.; Harriss, R. C.; Farmer, F. H.; and White, H. H.: Laboratory Analysis of Techniques for Remote Sensing of Oceanographic Parameters Using Laser Excitation. Applied Optics, Volume 22, January 1, 1983, p. 54-64.  
(Subject Category 48                      RTOP 506-61-73)
181. Houghton, W. M.; Exton, R. J.; and Gregory, R. W.: Field Investigation of Techniques for Remote Laser Sensing of Oceanographic Parameters. Remote Sensing of the Environment, Volume 13, March 1983, p. 17-32.  
(Subject Category 48                      RTOP 506-61-73)

182. Rhodes, D. B.; Franke, J. M.; Jones, S. B.; and Leighty, B. D.: Moiré Deflectometry with Deferred Analysis. Journal of Applied Optics, Volume 22, No. 5, March 1, 1983, p. 652-653.  
(Subject Category 35 RTOP 505-31-63)
183. Zuckerwar, Allan J.: Airflow Resistivity Instrument for In Situ Measurement on the Earth's Ground Surface. Review of Scientific Instruments, Volume 54, No. 5, May 1983, p. 597-599.  
(Subject Category 35 RTOP 505-32-03)
184. Zuckerwar, Allan J.: Acoustic Ground Impedance Meter. Journal of the Acoustical Society of America, Volume 73, No. 6, June 1983, p. 2180-2186.  
(Subject Category 71 RTOP 505-32-03)

#### Meeting Presentations

185. Allison, Sidney G.; Heyman, Joseph S.; and Salama, Kamel: Ultrasonic Measurement of Residual Stress in Variable Nozzle Plates for a Supersonic Tunnel. Presented at the 60th Semi-Annual Meeting of the Supersonic Tunnel Association, October 6-7, 1983, Williamsburg, Virginia.  
(Subject Category 71 RTOP 505-33-23)
186. Allison, Sidney G.; Heyman, Joseph S.; and Salama, Kamel: Ultrasonic Measurement of Residual Deformation Stress in Thin Metal Plates Using Surface Acoustic Waves. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending.  
(Subject Category 71 RTOP 505-33-23)
187. Burner, A. W.; and Goad, W. K.: Flow Visualization in a Cryogenic Wind Tunnel Using Holography. Presented at the University of Michigan/ASME/et al., Third International Symposium on Flow Visualization, September 6-9, 1983, Ann Arbor, Michigan. In Proceedings.  
(Subject Category 35 RTOP 505-31-53)
188. Burner, A. W.; Snow, W. L.; and Goad, W. K.: Video Model Deformation System for the National Transonic Facility. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia.  
(Available as NASA TM-85681.)  
(Subject Category 35 RTOP 505-31-53)
189. Cantrell, John H., Jr.: Acoustic Radiation Stress in Anisotropic Solids. Presented at the 105th Meeting of the Acoustical Society of America, May 10-13, 1983, Cincinnati, Ohio. Published in Journal of the Acoustical Society of America, Supplement I, Volume 73, Spring 1983, p. 283.  
(Subject Category 71 RTOP 505-33-23)
190. Cantrell, John H., Jr.: Acoustic Radiation Stress in Solids. Presented at the March General Meeting of the American Physical Society, March 21-25, 1983, Los Angeles, California. Abstract published in Bulletin of the American Physical Society, Volume 28, No. 3, March 1983, p. 461.  
(Subject Category 71 RTOP 505-33-23)

191. Cantrell, John H., Jr.: Assessment of Burn Depth With Ultrasound: A Promising Methodology in Burn Research. Presented at the Burn Conference "Where are the Frontiers in the Understanding of Burn Injuries?", September 26-28, 1983, Washington, DC.  
(Subject Category 71      RTOP 505-33-23)
192. Cantrell, John H., Jr.: Acoustic Radiation Stress in Solids. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending.  
(Subject Category 71      RTOP 505-33-23)
193. Cantrell, John H., Jr.; Winfree, William P.; and Heyman, Joseph S.: Profiles of Fatigue Damage in Graphite/Epoxy Composites From Ultrasonic Transmission Power Spectra. Presented at the NASA/ASTM Second United States/Japan Conference on Composite Materials, June 6-8, 1983, Hampton, Virginia. ASTM STP Pending.  
(Subject Category 71      RTOP 505-33-23)
194. Chern, Engmin J.; and Cantrell, John H., Jr.: Ultrasonic Characterization of Surface Flaws Using Oblique Angle Back Scattering Technique. Presented at the ASNT 14th Symposium on Nondestructive Evaluation, April 19-21, 1983, San Antonio, Texas. Proceedings Pending.  
(Subject Category 71      RTOP 505-33-23)
195. Hendricks, Herbert D.: A Four Channel 10-Nanometer Spacing Wavelength Demultiplexer. Presented at the SPIE/NASA Technical Symposium East '83, April 4-8, 1983, Arlington, Virginia. SPIE Paper No. 417-02. In Proceedings, Volume 417, 1983, p. 5-11.  
(Subject Category 32      RTOP 506-54-13)
196. Hendricks, Herbert D.; and Murray, Nicholas D.: Wavelength Division Multiplexing for Future Space Station Data Systems. Presented at the SPIE's 27th Annual International Technical Symposium and Instrument Display, August 21-26, 1983, San Diego, California. SPIE Paper No. 434-07.  
(Subject Category 08      RTOP 506-58-13)
197. Heyman, Joseph S.; Allison, Sidney G.; and Salama, Kamel: Influence of Carbon Content of Higher Order Ultrasonic Properties in Steel. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending.  
(Subject Category 71      RTOP 505-33-23)
198. Heyman, Joseph S.; and Yoder, L.: An Interferometric Measurement of the Acoustoelastic Constant of Rock Core Samples. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending.  
(Subject Category 71      RTOP 505-33-23)

199. Hunter, William W., Jr.; Honaker, William C.; and Gartrell, Luther R.: Application of Laser Anemometry to Cryogenic Wind Tunnels. Presented at the IEEE 10th International Congress on Instrumentation in Aerospace Simulation Facilities, September 20-22, 1983, Saint-Louis, France. In Proceedings.  
(Subject Category 09 RTOP 505-31-53)
200. Kantsios, Andronicos G.; and Courville, George: Update on Professionalism and Standards for Infrared Sensing Devices. Presented at the SPIE THERMOSENSE VI Conference, October 2-5, 1983, Oakbrook, Illinois. Proceedings Pending.  
(Subject Category 35 RTOP 506-63-34)
201. Kern, Frederick A.: Langley Research Center Metrology and Calibration Program. Presented at the Seventh NASA/DOE Metrology/Calibration Workshop, October 24-28, 1983, Albuquerque, New Mexico. Proceedings Pending.  
(Subject Category 38 RTOP 992-19-00)
202. Kern, Frederick A.; and Edwards, S. Franklin: Measurement Assurance Program Experience at the Langley Research Center. Presented at the Seventh NASA/DOE Metrology/Calibration Workshop, October 24-28, 1983, Albuquerque, New Mexico. Proceedings Pending.  
(Subject Category 38 RTOP 992-19-00)
203. Kern, Frederick A.; and Williams, Herbert E.: Automated Calibration. Presented at the Seventh NASA/DOE Metrology/Calibration Workshop, October 24-28, 1983, Albuquerque, New Mexico. Proceedings Pending.  
(Subject Category 35 RTOP 992-19-00)
204. Li, Peter; Winfree, William P.; Yost, W. T.; and Cantrell, John H., Jr.: Observation of Collinear Beam-Mixing by an Amplitude Modulated Ultrasonic Wave in a Solid. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending.  
(Subject Category 71 RTOP 505-33-23)
205. Miller, I. M.; Sproles, D. W.; and Dixon, N. H.: Theoretical Performance of a Vortex Generator Type of Cloud Droplet Sampler. Presented at the 29th Annual Technical Meeting of the Institute of Environmental Sciences, April 18-21, 1983, Los Angeles, California. In Proceedings.  
(Subject Category 25 RTOP 146-20-10)
206. Mitchell, Michael: Pressure Measurement System for the National Transonic Facility. Presented at the ISA 1983 Aerospace/Test Measurement Symposium, May 1-5, 1983, Albuquerque, New Mexico. In Proceedings.  
(Subject Category 35 RTOP 505-31-53)
207. Phillips, Donald H.: Implementation and Use of an Iterative Frozen Orbital Technique for Studies of Surfaces and Defects. Presented at the March General Meeting of the American Physical Society, March 21-25, 1983, Los Angeles, California. Abstract published in Bulletin of the American Physical Society, Volume 28, No. 5, May-June 1983, p. 861.  
(Subject Category 76 RTOP 147-33-03)

208. Singh, Jag J.; Davis, William T.; and Puster, Richard L.: A Proposed Fast Oxygen-Monitoring and Control System for Langley 8-Foot High Temperatures Tunnel. Presented at the 60th Semi-Annual Meeting of the Supersonic Tunnel Association, October 6-7, 1983, Williamsburg, Virginia.  
(Subject Category 35 RTOP 505-33-53)
209. Smith, Alphonso C.: Applications of Mass Spectrometry Techniques to Autoclave Curing of Materials. Presented at the Ames Laboratory, Iowa State University, et al., Review of Progress in Quantitative NDE, August 7-12, 1983, Santa Cruz, California. Proceedings Pending.  
(Subject Category 24 RTOP 506-53-23)
210. Upchurch, Billy T.; Wood, George M.; Swann, Robert T.; Allen, Gayle J.; Miller, Irvin M.; and Hoyt, Ronald F.: Mass Spectrometric Investigation of Isotope Exchange Reactions of Molecular Oxygen With Several Oxide Surfaces. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina.  
(Subject Category 23 RTOP 307-03-02)
211. Winfree, William P.: Ultrasonic Characterization of Changes in Viscoelastic Properties of Epoxy During Cure. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending.  
(Subject Category 71 RTOP 505-33-23)
212. Wood, George M.: Mass Spectrometric Analysis of the Boundary Layer Associated With the Tethered Satellite. Presented at the NASA/MSFC Applications of Tethers in Space Workshop, June 15-17, 1983, Williamsburg, Virginia. In Proceedings.  
(Subject Category 35 RTOP 506-51-13)
213. Wood, George M.; Lewis, Beverly W.; Upchurch, Billy T.; Nowak, Robert J.; Eide, Donald G.; and Paulin, Patricia A.: Developing Mass Spectrometric Techniques for Boundary Layer Measurement in High Enthalpy Test Facilities. Presented at the IEEE 10th International Congress on Instrumentation in Aerospace Simulation Facilities, September 20-22, 1983, Saint Louis, France. In Proceedings.  
(Subject Category 35 RTOP 307-02-02)
214. Wood, George M.; Upchurch, Billy T.; Ioup, George E.; Ioup, Juliette W.; and Rayborn, Grayson H.: Computer Enhanced Measurements With a Medium Resolution Mass Spectrometer. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina.  
(Subject Category 35 RTOP 506-54-23)
215. Yost, W. T.; and Cantrell, John H., Jr.: Relationship Between the Stress Acoustic Constants and the Ultrasonic Nonlinearity Parameters for Solids. Presented at the 105th Meeting of the Acoustical Society of America, May 10-13, 1983, Cincinnati, Ohio. Published in Journal of the Acoustical Society of America, Supplement I, Volume 73, Spring 1983, p. 282.  
(Subject Category 71 RTOP 505-33-23)

216. Zuckerwar, A. J.: Acoustical Determination of Thermodynamic Properties of the Water Dimer. Presented at the ICA/SOCFI 11th International Congress on Acoustics, July 19-27, 1983, Paris, France.  
(Subject Category 71 RTOP 505-32-03)

#### Technical Talks

217. Barber, Patrick; and Crouch, Roger K.: Electrochemistry Applied to the Etching of the Semiconductor Lead-Tin-Telluride. Presented at the 1983 Fall Meeting of the Electrochemical Society, October 7, 1983, Washington, DC.  
(Subject Category 26 RTOP 179-80-70)
218. Clark, I. O.; and Fripp, A. L., Jr.: The Growth of III-V Semiconductor Materials by Organometallic Chemical Vapor Deposition. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia.  
(Subject Category 23 RTOP 506-34-13)
219. Crouch, Roger K.; Debnam, W. J.; and Taylor, Ray: Thermal Diffusivity Measurements in PbTe and PbSnTe from Room Temperature to 1000°C. Presented at the South Dakota School of Mines and Technology, 18th International Thermal Conductivity Conference, October 3-5, 1983, Rapid City, South Dakota.  
(Subject Category 27 RTOP 179-80-70)
220. Guarino, J. F.: Instrumentation Development. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)
221. Hendrickson, B. M.; Giallorenzi, T. G.; Dworkin, L. U.; and Hendricks, H. D.: Tri-Service Annual Report on Fiber Optics. Presented at the DOD Tri-Service Annual Report on Fiber Optics, October 6, 1983, Washington, DC.  
(Subject Category 32 RTOP 506-54-13)
222. Hendricks, Herbert D.: Fiber Optics Technology Developments at Langley Research Center. Presented at the NASA Workshop on Fiber Optics for Propulsion Control, October 12-13, 1983, Cleveland, Ohio.  
(Subject Category 74 RTOP 506-58-13)
223. Hendricks, Herbert D.: Fiber Optics Wavelength Division Multiplexing for Aerospace Systems. Presented at the Technical Marketing Society of America Electro-Optics Systems and Technology Meeting, October 4, 1983, Washington, DC.  
(Subject Category 34 RTOP 506-58-13)
224. Heyman, Joseph S.: Quantitative Ultrasonic Materials Characterization From Nonlinear and True Attenuation Measurements. Presented at the 1983 ASM Metals Congress, October 2-6, 1983, Philadelphia, Pennsylvania.  
(Subject Category 71 RTOP 505-33-23)

225. Heyman, Joseph S.: Ultrasonic Bolt Monitor System. Presented at the NSIA/AIA/NASA/USAF Space Division, Mission Assurance Conference and Workshop, June 7-9, 1983, Los Angeles, California.  
(Subject Category 71 RTOP 505-53-23)
226. Heyman, Joseph S.: Applications of Ultrasonics in Aerospace. Presented at the Canadian Acoustical Association, et al., Ultrasonics International 1983 Conference and Exhibition, July 12-14, 1983, Halifax, Canada.  
(Subject Category 71 RTOP 505-33-23)
227. Heyman, Joseph S.: NDE in Composites Stress Measurement With Ultrasonics and Committee Assignments. Presented at the Gordon Research Conference on Nondestructive Evaluation, August 22-26, 1983, Andover, New Hampshire.  
(Subject Category 71 RTOP 505-53-23)
228. Hoppe, John C.: Application of a Laser Resonance Doppler Velocimeter at the NASA Langley Research Center 3-Inch Hypersonic Helium Tunnel. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia.  
(Subject Category 35 RTOP 505-31-13)
229. Looney, Karen T.; and Hayes, Paul J.: Investigation of Fast Initialization of Spacecraft Bubble Memory Systems. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia.  
(Subject Category 19 RTOP 506-58-13)
230. Rayborn, Grayson H.; Wood, George M.; Upchurch, Billy T.; and Howard, Samuel J.: Resolution of Fused Chromatography Peaks by Deconvolution With Extension of the Fourier Spectrum. Presented at the American Chemical Society Symposium, April 26, 1983, Jackson, Mississippi.  
(Subject Category 23 RTOP 506-54-23)
231. Salama, Kamel; Heyman, Joseph S.; and Allison, Sidney G.: Effect of Carbon Content on Relationship Between Temperature Dependence of Ultrasonic Velocity and Applied Stress in Steels. Presented at the 1983 TMS-AIME Symposium on Concepts of Fatigue Crack Growth Thresholds Guidance, October 2-6, 1983, Philadelphia, Pennsylvania.  
(Subject Category 71 RTOP 505-33-23)
232. Stermer, R. L.; and Sokoloski, M.: Optical Data Processing for Aerospace Applications. Presented at the Massachusetts Institute of Technology, IEEE Computer Society's 10th International Optical Computing Conference, April 6-8, 1983, Cambridge, Massachusetts.  
(Subject Category 74 RTOP 506-54-13)

#### Computer Programs

No computer programs.

## Tech Briefs

- 233. Batts, Colossie N.: Comparator With Noise Suppression. NASA Tech Brief LAR-13151.
- 234. Claus, Richard O.; and Garg, Avinash O. (Virginia Polytechnic Institute and State University): Optical Fiber Wideband Differential Interferometer. NASA Tech Brief LAR-13030.
- 235. Claus, Richard O.; and Turner, T. M. (Virginia Polytechnic Institute and State University): Dual Differential Interferometer for Measurements of Broadband Surface Acoustic Waves. NASA Tech Brief LAR-12966.
- 236. Claus, Richard O.; Wade, Janet C.; and Zerwekh, Paul S. (Virginia Polytechnic Institute and State University); and Cantrell, John H., Jr. (Langley Research Center): Optical Fiber Interferometer for Detection of Acoustic Emission in Composites. NASA Tech Brief LAR-12965.
- 237. Claus, Richard O.; and Zerwekh, Paul S. (Virginia Polytechnic Institute and State University): Ultrasonic Transducer With Gaussian Radial Pressure Distribution. NASA Tech Brief LAR-12967.
- 238. Connolly, John C.; and Botez, Dan (RCA Laboratories): Terraced Double-Heterojunction Large Optical Cavity Injection Laser. NASA Tech Brief LAR-13213.
- 239. Dholakia, Anil Ramniklal (RCA Corporation): Roof Polishing of Optical Fibers. NASA Tech Brief LAR-13070.
- 240. Edwards, H. B.: Lensless Scanning Telescope. NASA Tech Brief LAR-12648.
- 241. Hawrylo, Frank Z. (RCA Corporation): InGaAsP CW Lasers on (110) InP Substrates. NASA Tech Brief LAR-12840.
- 242. Hawrylo, Frank Z. (RCA Corporation): Wipe Melt for InP Seed Substrate. NASA Tech Brief LAR-12912.
- 243. \*Hepner, Timothy E.; and Meyers, James F.: Autocovariance Computer. NASA Tech Brief LAR-12968.
- 244. Ladany, Ivan; and Furman, Theodore R. (RCA Corporation): InGaAsP Stripe Laser. NASA Tech Brief LAR-12986.
- 245. Leighty, Bradley D.: Power Supply for 25W Arc Lamp. NASA Tech Brief LAR-13202.
- 246. Miller, Irvin M.: An Accurate Airborne Particle Sampler. NASA Tech Brief LAR-13080.

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247. Singh, Jag J. (Langley Research Center); Khandelwal, G. S. (Old Dominion University); and Mall, Gerald H. (Computer Sciences Corporation): Radionuclide Counting Technique Measures Wind Velocity. NASA Tech Brief LAR-12971.
248. Zuckerwar, Allan J.: Acoustic Ground-Impedance Meter. NASA Tech Brief LAR-12995.

#### Patents

249. Adams, Richard R.; MacConochie, Ian O.; and Poole, Bordie D., Jr.: Miniature Spectrally Selective Dosimeter. U.S. Patent 4,372,680. Issued February 8, 1983.  
(Subject Category 35)
250. Cantrell, John H., Jr.; and Heyman, Joseph S.: Frequency Tracked Gated Pulse Technique for Ultrasonic Frequency. U.S. Patent 4,391,142. Issued July 5, 1983.  
(Subject Category 71)
251. Clemmons, James I., Jr.: Instrument for Determining Coincidence and Elapse Time Between Independent Sources of Random Sequential Events. U.S. Patent 4,392,749. Issued July 12, 1983.  
(Subject Category 35)
252. Fripp, Archibald L.; Robertson, James B.; and Breckenridge, Roger A.: Pyroelectric Detector Arrays. U.S. Patent 4,379,970. Issued April 12, 1983.  
(Subject Category 33)
253. Gross, Chris: Self-Correcting Electronically Scanned Pressure Sensor. U.S. Patent 4,399,515. Issued August 16, 1983.  
(Subject Category 35)
254. Singh, Jag J.; Wood, George M.; Rayborn, Grayson, H.; and White, Frederick A.: Low Energy Electron Magnetometer Using a Monoenergetic Electron Beam. U.S. Patent 4,414,509. Issued November 8, 1983.  
(Subject Category 35)

PUBLICATIONS FOR FLIGHT DYNAMICS AND CONTROL DIVISION

Formal Reports

255. Barker, L. Keith: Vector-Algebra Approach To Extract Denavit-Hartenberg Parameters of Assembled Robot Arms. NASA TP-2191, August 1983, 32 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 506-54-63)
256. Barker, L. Keith; and Moore, Mary C.: Theoretical Method for Calculating Relative Joint Geometry of Assembled Robot Arms. NASA TP-2155, May 1983, 23 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 506-54-63)
257. Batterson, James G.: Analysis of Oscillatory Motion of a Light Airplane at High Values of Lift Coefficient. NASA TM-84563, February 1983, 49 p.  
(Avail: NTIS                      Subject Category 08                      RTOP 505-34-03)
258. Grantham, William D.; Deal, Perry L.; Keyser, Gerald L., Jr.; and Smith, Paul M.: Simulator Study of Flight Characteristics of a Large Twin-Fuselage Cargo Transport Airplane During Approach and Landing. NASA TP-2183, November 1983, 85 p.  
(Avail: NTIS                      Subject Category 08                      RTOP 505-34-03)
259. Keckler, Claude R.; Rodriguez, Guillermo, E.; and Groom, Nelson J. (Editors): Integrated Flywheel Technology - 1983. NASA CP-2290, December 1983, 220 p.  
(Avail: NTIS                      Subject Category 20                      RTOP 506-57-13)
260. Klein, Vladislav; and Batterson, James G.: Determination of Airplane Model Structure From Flight Data Using Splines and Stepwise Regression. NASA TP-2126, March 1983, 50 p.  
(Avail: NTIS                      Subject Category 08                      RTOP 505-34-03)
261. Pennington, Jack E.: A Rate-Controlled Teleoperator Task With Simulated Transport Delays. NASA TM-85653, September 1983, 45 p.  
(Avail: NTIS                      Subject Category 54                      RTOP 506-64-23)

Quick-Release Technical Memorandums

262. Abbasy, Imran: Determination of Stability and Control Parameters of a General Aviation Airplane From Flight Data. NASA TM-84635, March 1983, 44 p.  
(Avail: NTIS                      Subject Category 08                      RTOP 505-34-03)
263. Barker, L. Keith: Kinematic Equations for Resolved-Rate Control of an Industrial Robot Arm. NASA TM-85685, November 1983, 36 p.  
(Avail: NTIS                      Subject Category 63                      RTOP 506-54-63)
264. Hankins, Walter W.; Pennington, Jack E.; and Barker, L. Keith: Decision-Making and Problem Solving Methods in Automation Technology. NASA TM-83216, May 1983, 43 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 506-54-63)

265. Oehman, Waldo I.: Stability and Control of a Supersonic Transport Airplane During Landing Approach. NASA TM-84659, April 1983, 31 p.  
(Avail: NTIS Subject Category 08 RTOP 505-34-03)
266. Roy, Marie-Louise; and Sliwa, Steven M.: A Computer Program for Obtaining Airplane Configuration Plots From Digital Datcom Input Data. NASA TM-84639, March 1983, 60 p.  
(Avail: NTIS Subject Category 61 RTOP 505-34-03)

#### Contractor Reports

267. Ashkenas, I. L.; Magdaleno, R. E.; and McRuer, D. T.: Flight Control and Analysis Methods for Studying Flying and Ride Qualities of Flexible Transport Aircraft. (NAS1-16847 Systems Technology, Inc.) NASA CR-172201, August 1983, 153 p.  
(Avail: STIF Subject Category 05 RTOP 505-34-03)
268. Berman, William Joseph: Development of a Prototype Multi-Processing Interactive Software Invocation System. (NAS1-16985 Advanced Programming Techniques, Inc.) NASA CR-172210, September 1983, 12 p.  
(Avail: NTIS Subject Category 61 RTOP 505-37-23)
269. Shebalin, John V.: Nonlinear Dynamics and Control of a Vibrating Rectangular Plate. (NAS1-16000 Kentron International, Inc.) NASA CR-172215, October 1983, 40 p.  
(Avail: NTIS Subject Category 39 RTOP 506-57-13)
270. Simons, James R.: The Use of Laterally Vectored Thrust to Counter Thrust Asymmetry in a Tactical Jet Aircraft. (NCC1-29 The George Washington University.) NASA CR-166047, January 1983, 96 p.  
(Avail: NTIS Subject Category 08 RTOP 505-34-03)

#### Journal Articles and Other Publications

271. Sundararajan, N.; and Montgomery, R. C.: Identification of Structural Dynamics Systems Using Least-Square Lattice Filters. Journal of Guidance, Control, and Dynamics, Volume 6, September-October 1983, p. 374-381.  
(Subject Category 18 RTOP 506-57-13)

#### Meeting Presentations

272. Adams, William M., Jr.; Tiffany, Sherwood H.; and Newsom, Jerry R.: Tools for Active Control System Design. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 08 RTOP 505-34-03)

273. Adams, William M., Jr.; and Tiffany, Sherwood H.: Design of a Candidate Flutter Suppression Control Law for DAST ARW-2. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2221.  
(Subject Category 08      RTOP 505-34-03)
  
274. Arbuckle, P. Douglas; and Sliwa, Steven M.: Parametric Study of Control Constraints for a Canard Configured Medium Range Transport Using Conceptual Design Optimization. Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2141.  
(Subject Category 05      RTOP 505-34-03)
  
275. Banks, H. T.; Daniel, P. L.; and Armstrong, E. S.: Spline-Based Parameter Estimation Technique for Distributed Systems. Presented at the VPI&SU/AIAA Fourth Symposium on Dynamics and Control of Large Structures, June 6-8, 1983, Blacksburg, Virginia. Proceedings Pending.  
(Subject Category 63      RTOP 506-57-13)
  
276. Batterson, James G.; and Klein, Vladislav: An Application of Parameter Identification to the Oscillatory Motion of an Airplane at High  $C_L$ . Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2067.  
(Subject Category 08      RTOP 505-34-03)
  
277. Batterson, James G.; and Klein, Vladislav: Applications of Model Structure Determination to Flight Data. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 08      RTOP 505-34-03)
  
278. Dahlgren, John B.; and Taylor, Lawrence W., Jr.: Spacecraft Control Research at NASA. Presented at the AGARD 37th Symposium of the Guidance and Control Panel on Guidance and Control Techniques for Advanced Space Vehicles, September 27-30, 1983, Florence, Italy. AGARD Paper No. 11. Proceedings Pending.  
(Subject Category 18      RTOP 506-57-13)
  
279. Gracey, C.; and Price, D. B.: Altitude/Path-Angle Transitions in Fuel-Optimal Problems for Transport Aircraft. Presented at the 1983 American Control Conference, June 22-24, 1983, San Francisco, California. In Proceedings.  
(Subject Category 08      RTOP 505-34-03)
  
280. Grantham, William D.: Large Aircraft Handling Qualities. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 08      RTOP 505-34-03)
  
281. Keckler, C. R.: Integrated Power/Attitude Control System (IPACS). Presented at the OAST Integrated Flywheel Technology Workshop, August 2-3, 1983, Greenbelt, Maryland. NASA CP 2290.  
(Subject Category 20      RTOP 506-57-13)

282. Keckler, C. R.: Integrated Power/Attitude Control System (IPACS) Technology Experiment. Presented at the STEP Experiment Requirements Workshop, June 29 - July 1, 1983, Hampton, Virginia. NASA CP 2294.  
(Subject Category 20 RTOP 506-57-13)
283. Keckler, C. R.: Vibration Isolation Technology Experiment. Presented at the STEP Experiment Requirements Workshop, June 29 - July 1, 1983, Hampton, Virginia. NASA CP 2294.  
(Subject Category 20 RTOP 506-57-13)
284. Keckler, C. R.; and Groom, N. J.: Advanced Control and Power System (ACAPS) Technology Program. Presented at the OAST Integrated Flywheel Technology Workshop, August 2-3, 1983, Greenbelt, Maryland. NASA CP 2290.  
(Subject Category 20 RTOP 506-57-13)
285. Keckler, Claude R.; and Hamilton, Brian J.: A System for Load Isolation and Precision Pointing. Presented at the SPIE Conference on Advanced Technology Optical Telescopes II, September 5-6, 1983, London, England. SPIE Paper No. 444-21.  
(Subject Category 31 RTOP 506-57-13)
286. Klein, V.; Batterson, J. G.; and Abbasy, I.: Determination of Aerodynamic Parameters of a Fighter Airplane from Flight Data at High Angles of Attack. Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2066.  
(Subject Category 08 RTOP 505-34-03)
287. Meirovitch, L.; Baruh, H.; Montgomery, R. C.; and Williams, J. P.: Nonlinear Control of an Experimental Beam by IMSC. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0855-CP.  
(Subject Category 18 RTOP 506-57-13)
288. Montgomery, Raymond C.: Structural Control Research and Experiments at NASA/LaRC. Presented at the SPIE Los Angeles 1983 Technical Symposium, January 17-21, 1983, Los Angeles, California. SPIE Paper No. 383-26.  
(Subject Category 18 RTOP 506-54-73)
289. Montgomery, Raymond C.: Reliability Considerations in the Placement of Control System Components. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2260-CP.  
(Subject Category 18 RTOP 506-57-13)
290. Orlando, Nancy E.: A System for Intelligent Teleoperation Research. Presented at the AIAA Computers in Aerospace IV Conference, October 24-26, 1983, Hartford, Connecticut. AIAA Paper No. 83-2376.  
(Subject Category 62 RTOP 506-54-63)

291. Pamadi, Bandu N.; and Taylor, Lawrence W., Jr.: An Evaluation of Aerodynamic Modeling of Spinning Light Airplanes. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0368.  
(Subject Category 01 RTOP 505-43-33)
292. Pennington, Jack E.; and Hankins, Walter W., III: Man's Role in a Remote Orbital Servicing System. Presented at the 1983 SAE Aerospace Congress & Exposition, October 3-6, 1983, Long Beach, California. Paper No. 83-1422. Proceedings Pending.  
(Subject Category 53 RTOP 506-57-23)
293. Price, Douglas B.; and Gracey, Christopher: Feedback Laws for Fuel Minimization for Transport Aircraft. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 08 RTOP 505-34-03)
294. Price, Douglas B.; and Gracey, Christopher: A Study of Altitude and Flight Path Angle Dynamics for a Singularly Perturbed Fuel Optimization Problem. Presented at the 1983 American Control Conference, June 22-24, 1983, San Francisco, California. In Proceedings.  
(Subject Category 08 RTOP 505-34-03)
295. Rising, J. J.; Davis, W. J.; and Grantham, W. D.: An Advanced Control System for a Next Generation Transport Aircraft. Presented at the AIAA Guidance and Control Conference, August 14-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2194.  
(Subject Category 08 RTOP 505-34-03)
296. Schy, Albert A.; and Giesy, Daniel P.: Tradeoff Studies in Multiobjective Insensitive Design of Airplane Control Systems. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2273-CP.  
(Subject Category 08 RTOP 506-57-13)
297. Sliwa, Steven M.; and Arbuckle, P. Douglas: Implications of Control Technology on Aircraft Design. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 08 RTOP 505-34-03)
298. Suit, W. T.; Compton, H. R.; Scallion, W. I.; and Schiess, J. R.: Simplified Analysis Techniques to Support the Determination of Shuttle Aerodynamics. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0117.  
(Subject Category 66 RTOP 505-34-33)

299. Suit, William T.; Compton, Harold R.; Scallion, William I.; Schiess, James R.; and Gahan, L. Sue: Analysis of Shuttle Oscillation in the Mach Number = 1.7 to Mach Number = 1.0 Range. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 18 RTOP 505-34-03)
300. Sundararajan, N.; and Montgomery, R. C.: Experiments Using Least Square Lattice Filters for the Identification of Structural Dynamics. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0880-CP.  
(Subject Category 18 RTOP 506-54-73)
301. Sundararajan, N.; and Montgomery, R. C.: Adaptive Control of a Flexible Beam Using Least Square Lattice Filters. Presented at the VPI&SU/AIAA Fourth Symposium on Dynamics and Control of Large Structures, June 6-8, 1983, Blacksburg, Virginia. Proceedings Pending.  
(Subject Category 18 RTOP 506-57-13)
302. Sundararajan, N.; Williams, J. P.; and Montgomery, R. C.: Parameter Testing for Lattice Filter Based Adaptive Modal Control Systems. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2245-CP.  
(Subject Category 18 RTOP 506-57-13)
303. Taylor, L. W., Jr.: A Laboratory Experiment Used to Evaluate Control Laws for Flexible Spacecraft...A NASA/IEEE Design Challenge. Presented at the VPI&SU/AIAA Fourth Symposium on Dynamics and Control of Large Structures, June 6-8, 1983, Blacksburg, Virginia. Proceedings Pending.  
(Subject Category 18 RTOP 506-57-13)
304. Taylor, Lawrence W., Jr.; and Pamadi, Bandu N.: Estimation of Parameters Involved in High Angle-of-Attack Aerodynamic Theory Using Spin Flight Test Data. Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2086.  
(Subject Category 08 RTOP 506-57-13)
305. Williams, Jeffrey P.; and Montgomery, Raymond C.: Experimental Implementation of Parameter Adaptive Control on a Free-Free Beam. Presented at the VPI&SU/AIAA Fourth Symposium on Dynamics and Control of Large Structures, June 6-8, 1983, Blacksburg, Virginia. Proceedings Pending.  
(Subject Category 18 RTOP 506-57-13)

#### Technical Talks

306. Armstrong, Ernest S.: Parameter and State Estimation for Distributed Models of the Maypole Hoop/Column Antenna Surface. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 63 RTOP 506-57-13)

307. Armstrong, Ernest S.: Aspects of the Systems Identification and Control of Large Space Structures. Presented at the SIAM Annual Meeting of the Southeast Atlantic Section, March 25-26, 1983, Clemson, South Carolina. (Subject Category 63 RTOP 506-57-13)

#### Computer Programs

No computer programs.

#### Tech Briefs

308. Armstrong, Ernest S. (Langley Research Center); and Howard University: Optimal Regulator Algorithms for the Control of Linear Systems. NASA Tech Brief LAR-12313 and LAR-12953.
309. Campbell, Roy H.; Kolstad, Robert B.; Holle, Daniel F.; Miller, Thomas J.; Krause, Philip; Horton, Kurt; and Macke, Tom (University of Illinois at Urbana-Champaign): Path Pascal. NASA Tech Brief LAR-12854.
310. Phillips, William H. (Langley Research Center); and Larrabee, E. Eugene (Massachusetts Institute of Technology): Propeller Design Program. NASA Tech Brief LAR-13141/13142.

#### Patents

311. Phillips, William H.: Solar Powered Aircraft. U.S. Patent 4,415,133. Issued November 15, 1983. (Subject Category 44)



PUBLICATIONS FOR FLIGHT ELECTRONICS DIVISION

Formal Reports

312. Bowker, David E.; Hardesty, Charles A.; and Jobson, Daniel J.: Remote Sensing of Sediment and Chlorophyll With the Test-Bed Aircraft Multispectral Scanner. NASA TM-84590, March 1983, 24 p.  
(Avail: NTIS Subject Category 35 RTOP 506-61-03)
313. Hennigar, Harold F.; Hirstein, William S.; Schaffner, Sally K.; Delnore, Victor E.; and Grantham, William L.: Greenland 1979 Microwave Remote Sensing Data Catalog Report - October 14 and 15, 1979. NASA TM-84571, March 1983, 63 p.  
(Avail: NTIS Subject Category 48 RTOP 506-58-23)
314. Hirstein, William S.; Hennigar, Harold F.; Schaffner, Sally K.; Delnore, Victor E.; and Grantham, William L.: Beaufort/Bering 1979 Microwave Remote Sensing Data Catalog Report - March 14-24, 1979. NASA TM-84609, May 1983, 111 p.  
(Avail: NTIS Subject Category 48 RTOP 146-40-06)
315. Holland, James A.: Atmospheric Simulator and Calibration System for Remote Sensing Radiometers. NASA TM-84607, March 1983, 11 p.  
(Avail: NTIS Subject Category 35 RTOP 618-22-31)
316. Grew, Gary W.; and Mayo, Leonard S.: Ocean Color Algorithm for Remote Sensing of Chlorophyll. NASA TP-2164, May 1983, 28 p.  
(Avail: NTIS Subject Category 43 RTOP 307-01-02)
317. Schroeder, Lyle C.; and Mitchell, John L.: Archival of Aircraft Scatterometer Data From AAFE RADSCAT Missions. NASA TM-84608, August 1983, 24 p.  
(Avail: NTIS Subject Category 48 RTOP 146-40-05)

Quick-Release Technical Memorandums

318. Bailey, M. C.: Preliminary Design of 19-Element Feed Cluster for a Large F/D Reflector Antenna. NASA TM-85666, August 1983, 23 p.  
(Avail: NTIS Subject Category 32 RTOP 506-58-23)
319. Lovelady, Ray W.; and Ferguson, Robert L.: Review of Underwater Acoustic Systems and Methods for Locating Objects Lost at Sea. NASA TM-85727, November 1983, 74 p.  
(Avail: NTIS Subject Category 71 RTOP 505-34-13)
320. Ortiz, José A.; and Meredith, Barry D.: High-Speed Digital Signal Normalization for Feature Identification. NASA TM-85719, November 1983, 21 p.  
(Avail: NTIS Subject Category 60 RTOP 506-58-13)

### Contractor Reports

321. Echols, F. L.; and Broome, P. A.: A Definition of STS Accommodations for Attached Payloads. (NAS8-32350 McDonnell Douglas Technical Services Company, Inc.) NASA CR-172223, September 1983, 123 p.  
(Avail: NTIS                      Subject Category 16                      RTOP 506-62-43)
  
322. Goglia, G. L.; and Shen, J. Y.: Experimental and Analytical Studies of a True Airspeed Sensor. (NSG-1177 Old Dominion University Research Foundation.) NASA CR-165704, May 1983, 172 p.  
(Avail: NTIS                      Subject Category 06                      RTOP 505-41-63)
  
323. Lowrie, J. W.; Tietz, J. C.; Thomas, H. M.; Gremban, K. D.; Hughes, C.; and Chang, C. Y.: Study and Simulation Results for Video Landmark Acquisition and Tracking Technology (VILAT II). (NAS1-15602 Martin Marietta Aerospace.) NASA CR-166066, February 1983, 79 p.  
(Avail: NTIS                      Subject Category 43                      RTOP 506-61-03)
  
324. Mahan, J. R.: Transient Thermal Modeling of the Nonscanning ERBE Detector. (NAS1-16508 Virginia Polytechnic Institute and State University.) NASA CR-172240, November 1983, 107 p.  
(Avail: IAC                      Subject Category 43                      RTOP 619-12-01)
  
325. Staff of Texas Instruments Incorporated: Test System for Matrix Manipulation Module. (NAS1-15623 Texas Instruments Incorporated.) NASA CR-166013, January 1983, 79 p.  
(Avail: STIF                      Subject Category 33                      RTOP 506-61-33)
  
326. Thomas, G. Lamar: Design and Development of a NEEDS Information Adaptive System (IAS). (NAS1-16544 Martin Marietta Corporation.) NASA CR-166102, May 1983, 122 p.  
(Avail: STIF                      Subject Category 60                      RTOP 506-58-13)
  
327. Turner, Robert E.: A Stochastic Atmospheric Model for Remote Sensing Applications. (NAS1-17006 Science Applications, Inc.) NASA CR-172181, August 1983, 35 p.  
(Avail: NTIS                      Subject Category 43                      RTOP 506-58-13)

### Journal Articles and Other Publications

328. Blume, H.-J. C.; Huehnerfuss, H.; and Alpers, W.: Variation of the Microwave Brightness Temperature of Sea Surfaces Covered With Mineral and Monomolecular Oil Films. IEEE Transactions on Geoscience and Remote Sensing-S, Volume GE-21, July 1983, p. 295-300.  
(Subject Category 48                      RTOP 307-02-02)
  
329. Clark, I. O.; Fripp, A. L.; Debnam, W. J., Jr.; Crouch, R. K.; and Brewer, W. D.: Solutal Diffusion Coefficient for Liquid PbTe-SnTe. Journal of the Electrochemical Society, Volume 130, January 1983, p. 164-167.  
(Subject Category 23                      RTOP 179-80-10)

330. Croswell, W. F.; Fedors, J. C.; Hoge, F. E.; Swift, R. N.; and Johnson, J. C.: Ocean Experiments and Remotely Sensed Images of Chemically Dispersed Oil Spills. IEEE Transactions on Geoscience and Remote Sensing, Volume GE-21, January 1983, p. 2-15.  
(Subject Category 45 RTOP 176-30-34)
331. Huck, F. O.; Fales, C. L.; Park, S. K.; Speray, D. E.; and Self, M. O.: Application of Information Theory to the Design of Line-Scan and Sensor-Array Imaging Systems. Optics and Laser Technology, Volume 30, February 1983, p. 21-34.  
(Subject Category 35 RTOP 506-58-13)
332. Meredith, B. D.; Carney, P. C.; and LaBaugh, R. J.: Laboratory System for Demonstrating Spacecraft Processing of Multispectral Image Data. Optical Engineering, Volume 22, March-April 1983, p. 260-266.  
(Subject Category 60 RTOP 506-61-03)

#### Meeting Presentations

333. Bair, Clayton H.: CO<sub>2</sub> Laser Development and Option. Presented at the NASA/MSFC Second Multiagency Lidar Backscatter Workshop, April 12-13, 1983, Huntsville, Alabama.  
(Subject Category 35 RTOP 506-54-23)
334. Bowker, D. E.; Davis, R. E.; Von Ofenheim, W. H. C.; and Myrick, D. L.: Estimation of Spectral Reflectance Signatures From Spectral Radiance Profiles. Presented at the Environmental Research Institute of Michigan Seventeenth International Symposium on Remote Sensing of Environment, May 9-13, 1983, Ann Arbor, Michigan. Paper No. C-24. Proceedings Pending.  
(Subject Category 43 RTOP 506-53-13)
335. Davis, Richard E.; and Fischer, Michael C.: Cloud Particle Effects on Laminar Flow and Instrumentation for Their Measurement Aboard a NASA LFC Aircraft. Presented at the AIAA/AHS/IES/SETP 2nd Flight Testing Conference and Technical Display, November 16-18, 1983, Las Vegas, Nevada. AIAA Paper No. 83-2734.  
(Subject Category 02 RTOP 534-01-13)
336. Hess, Robert V.: CO<sub>2</sub> Lidar--Meteorological Inputs/Aircraft Application. Presented at the NASA/MSFC Second Multiagency Lidar Backscatter Workshop, April 12-13, 1983, Huntsville, Alabama.  
(Subject Category 35 RTOP 506-54-23)
337. Hess, Robert V.: CO<sub>2</sub> Future Plans. Presented at the NASA/MSFC Second Multiagency Lidar Backscatter Workshop, April 12-13, 1983, Huntsville, Alabama.  
(Subject Category 35 RTOP 506-54-23)

338. Hess, R. V.; Brockman, P.; Bair, C. H.; Staton, L. D.; Lytle, C. D.; Laughman, L. M.; and Kaplan, M. L.: Coherent Infrared Lidar Missions and Technology Needs for Measurements of Transport and Concentration of Tropospheric Trace Species. Presented at the SPIE/NASA Technical Symposium East '83, April 4-8, 1983, Arlington, Virginia. SPIE Paper No. 415-07. Proceedings Pending.  
(Subject Category 35 RTOP 506-54-23)
339. Hoell, J. M., Jr.; and LeBel, P. J.: Temporal Variability of Atmospheric Ammonia. Presented at the 1983 Spring Meeting of the American Geophysical Union, May 30 - June 3, 1983, Baltimore, Maryland. Abstract published in EOS Transactions, Volume 64, No. 18, May 1983, p. 195-196.  
(Subject Category 45 RTOP 176-20-03)
340. Huck, F. O.; Fales, C. L.; Park, S. K.; and Samms, R. W.: Image-Plane Processing for Improved Computer Vision. Presented at the NASA Optical Information Processing Conference II, August 30-31, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 35 RTOP 506-58-13)
341. Huck, F. O.; Fales, C. L.; Park, S. K.; Samms, R. W.; and Self, M. O.: Information Theory Analysis of Sensor-Array Imaging Systems for Computer Vision. Presented at the 1983 SPIE International Technical Conference/Europe, April 18-22, 1983, Geneva, Switzerland. SPIE Paper No. 397-12.  
(Subject Category 35 RTOP 506-61-03)
342. Jalink, Antony, Jr.: ER-2 Lidar Instrumentation. Presented at the NASA/MSFC Second Multiagency Lidar Backscatter Workshop, April 12-13, 1983, Huntsville, Alabama.  
(Subject Category 45 RTOP 618-32-33)
343. Jasperson, W. H.; Nastrom, G. D.; Davis, R. E.; and Holdeman, J. D.: Cloud Encounter Statistics in the 28.5-43.5 KFT Altitude Region From Four Years of GASP Observations. Presented at the AMS/AIAA 9th Conference on Aerospace and Aeronautical Meteorology, June 6-9, 1983, Omaha, Nebraska. Proceedings Pending.  
(Subject Category 47 RTOP 534-01-13)
344. Meredith, Barry D.; LaBaugh, Robert J.; and Aanstoos, James V.: Technical Evaluation of the Information Adaptive System. Presented at the SPIE's 27th Annual International Technical Symposium and Instrument Display, August 21-26, 1983, San Diego, California. SPIE Paper No. 431-32.  
(Subject Category 60 RTOP 506-58-13)
345. Rogowski, R. S.; Miller, I. M.; Wood, G. M.; Upchurch, B. T.; Schryer, D. R.; and Hess, R. V.: Evaluation of Catalysts for Closed Cycle Operation of High Energy Pulsed CO<sub>2</sub> Lasers. Presented at the SPIE/NASA Technical Symposium East '83, April 4-8, 1983, Arlington, Virginia. SPIE Paper No. 415-15. Proceedings Pending.  
(Subject Category 36 RTOP 307-01-02)

346. Sachse, Glen W.; Hill, Gerald F.; and Hoell, James M., Jr.: Airborne Tunable Diode Laser System for Trace Gas Measurements. Presented at the SPIE's 27th Annual International Technical Symposium and Instrument Display, August 21-26, 1983, San Diego, California. SPIE Paper No. 438-15.  
(Subject Category 35 RTOP 176-40-05)
347. Schroeder, L. C.; Grantham, W. L.; Bracalente, E. M.; Britt, C. L.; Shanmugam, K. S.; Wentz, F. J.; Wylie, D. P.; and Hinton, B. B.: A Study of Removal of Ambiguous Wind Direction Results for a Ku-Band Scatterometer Wind Sensor Using Measurements at Three Different Azimuth Angles. Presented at the 1983 Joint International IEEE Geoscience and Remote Sensing Society Symposium (IGARSS '83) and URSI/USNC--Commission F Meeting, August 31 - September 2, 1983, San Francisco, California. Paper No. 145. In IEEE Symposium Digest.  
(Subject Category 48 RTOP 146-40-05)
348. Shull, Thomas A.; and Rinsland, Pamela L.: Automated Control and Data Acquisition for a Tunable Diode Laser Heterodyne Spectrometer. Presented at the AIAA Computers in Aerospace IV Conference, October 24-26, 1983, Hartford, Connecticut. AIAA Paper No. 83-2378-CP.  
(Subject Category 35 RTOP 506-61-73)
349. Sidney, B. D.: Heterodyne Applications of Tunable Semiconductor Diode Lasers. Presented at the SPIE/NASA Technical Symposium East '83, April 4-8, 1983, Arlington, Virginia. SPIE Paper No. 415-16. Proceedings Pending.  
(Subject Category 36 RTOP 506-54-23)
350. Zaun, N. H.; Mauldin, L. E., III; and McCormick, M. P.: Design and Performance of the Stratospheric Aerosol and Gas Experiment II (SAGE II) Instrument. Presented at the SPIE's 27th Annual International Technical Symposium and Instrument Display, August 21-26, 1983, San Diego, California. SPIE Paper No. 430-14.  
(Subject Category 46 RTOP 619-12-20)

#### Technical Talks

351. Hoell, James M., Jr.; LeBel, Peter J.; and Braman, Robert S.: Simultaneous Measurements of Tropospheric Ammonia and Nitric Acid. Presented at the IAMAP/CACGP International Symposium on Tropospheric Chemistry, August 28 - September 3, 1983, Oxford, England.  
(Subject Category 45 RTOP 176-20-03)
352. Hunter, Monica Y.: Development of the Pushbroom Microwave Radiometer. Presented at the National Technical Association Student Technical Symposium, July 25-30, 1983, Kissimmee, Florida.  
(Subject Category 33 RTOP 506-54-23)
353. Sachse, Glen W.; and Cheo, Peter K.: A Microwave Tunable Laser Source for Remote Sensing Applications. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada.  
(Subject Category 35 RTOP 146-20-10)

354. Samms, R. W.; Fales, C. L.; Huck, F. O.; and Park, S. K.: Sensor-Array Image-Plane Processing for Improved Information Efficiency. Presented at the AAS/OSA Joint Topical Meeting on Information Processing in Astronomy and Optics, June 23-24, 1983, St. Paul, Minnesota.  
(Subject Category 35 RTOP 506-58-13)

#### Computer Programs

No computer programs.

#### Tech Briefs

355. Benz, Harry F.: Electronically Variable Imaging. NASA Tech Brief LAR-12633.
356. Campbell, Richard E.; and McPherson, John P.: Cloud Particle Detector. NASA Tech Brief LAR-13137.
357. Cash, Bob (Martin Marietta Corporation): Digital High-Current Monitor. NASA Tech Brief LAR-13072.
358. Cash, Bob; and Thornton, Michael G. (Martin Marietta Corporation): Floating Input Detector. NASA Tech Brief LAR-13073.
359. Couch, Richard H.; Hearn, Chase P.; and Williams, James B.: Microprogramed Sequencer for Tunable RF Oscillator. NASA Tech Brief LAR-12903.
360. Crouch, Roger K.; and Debnam, W. J. (Langley Research Center); and Ryan, R. (BOMCO, Inc.): Ampoule With Integral Feedthroughs. NASA Tech Brief LAR-12899.
361. Crouch, Roger K.; and Debnam, William J. (Langley Research Center); and Taylor, Ray (CINDAS): Vacuum Ampoule Isolates Corrosive Materials. NASA Tech Brief LAR-12898.
362. Dennis, Dale V. (Kentron International, Inc.): Aircraft Control Position Indicator. NASA Tech Brief LAR-12984.
363. Katzberg, S. J.; Kowitz, H. R.; Rowland, C. W.; Shull, T. A.; and Ruggles, S. L. (Langley Research Center); and Matthews, L. F. (Kentron International, Inc.): Measuring Excess Noise in SDL's. NASA Tech Brief LAR-12938.
364. Miller, M. D.; and Pickhardt, V. Y. (Perkin-Elmer Corporation): Novel Structure for (PbSn)Te Diode Laser. NASA Tech Brief LAR-13059.
365. Stermer, R. L., Jr.; and Fripp, A. L., Jr. (Langley Research Center); and Jones, A. B.; McMullen, J. D.; Manasevit, H. M.; Gergis, I. S.; and Soclof, S. I. (Rockwell International): Technique for Producing High-Mobility Epitaxial Silicon Wafers. NASA Tech Brief LAR-12846.

## Patents

No patents.

# PUBLICATIONS FOR FLIGHT CONTROL SYSTEMS DIVISION

## Formal Reports

366. Abbott, Terence S.: Flight Assessment of a Data-Link-Based Navigation-Guidance Concept. NASA TM-84493, April 1983, 30 p.  
(Avail: NTIS Subject Category 03 RTOP 505-35-23)
367. Adams, James J.: Simulator Study of a Flight Director Display. NASA TM-84581, March 1983, 25 p.  
(Avail: NTIS Subject Category 06 RTOP 505-35-23)
368. Adams, James J.: Simulator Study of Pilot-Aircraft-Display System Response Obtained With a Three-Dimensional-Box Pictorial Display. NASA TP-2122, December 1983, 50 p.  
(Avail: NTIS Subject Category 06 RTOP 505-35-23)
369. Anon.: Joint University Program for Air Transportation Research - 1982. NASA CP-2285, October 1983, 161 p.  
(Avail: NTIS Subject Category 01 RTOP 505-34-13)
370. Bergeron, Hugh P.; and Shaughnessy, John D. (Editors): Controls, Displays, and Information Transfer for General Aviation IFR Operations. NASA CP-2279, October 1983, 284 p.  
(Avail: NTIS Subject Category 01 RTOP 505-35-23)
371. Eckhardt, Dave E., Jr.: Time-Critical Multirate Scheduling Using Contemporary Real-Time Operating System Services. NASA TM-85665, September 1983, 11 p.  
(Avail: NTIS Subject Category 59 RTOP 505-35-33)
372. Kelly, James R.: Effect of Lead-Aircraft Ground-Speed Quantization on Self-Spacing Performance Using a Cockpit Display of Traffic Information. NASA TP-2194, October 1983, 48 p.  
(Avail: NTIS Subject Category 06 RTOP 505-35-23)
373. Knox, Charles E.: Planning Fuel-Conservative Descents With or Without Time Constraints Using a Small Programmable Calculator - Algorithm Development and Flight Test Results. NASA TP-2085, February 1983, 37 p.  
(Avail: NTIS Subject Category 06 RTOP 534-04-13)
374. Montoya, R. J.; Howell, W. E.; Bundick, W. T.; Ostroff, A. J.; Hueschen, R. M.; and Belcastro, Christine M.: Restructurable Controls. NASA CP-2277, August 1983, 195 p.  
(Avail: NTIS Subject Category 08 RTOP 505-34-13)
375. Ostroff, Aaron J.; Hueschen, Richard M.; Hellbaum, R. F.; Belcastro, Christine M.; and Creedon, J. F.: Evaluation of a Total Energy-Rate Sensor on a Transport Airplane. NASA TP-2212, November 1983, 46 p.  
(Avail: NTIS Subject Category 06 RTOP 534-04-13)



376. Parrish, Russell V.; and Bowles, Roland L.: Motion/Visual Cueing Requirements for Vortex Encounters During Simulated Transport Visual Approach and Landing. NASA TP-2136, April 1983, 21 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-35-33)
377. Parrish, Russell V.; and Martin, Dennis J., Jr.: Application of Nonlinear Adaptive Motion Washout to Transport Ground-Handling Simulation. NASA TM-84568, February 1983, 39 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-35-33)
378. Parrish, Russell V.; McKissick, Burnell T.; and Ashworth, Billy R.: Comparison of Simulator Fidelity Model Predictions With In-Simulator Evaluation Data. NASA TP-2106, February 1983, 37 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-35-33)
379. Parrish, Russell V.; and Steinmetz, George G.: Evaluation of g-Seat Augmentation of Fixed-Base/Moving-Base Simulation for Transport Landings Under Two Visually Imposed Runway Width Conditions. NASA TP-2135, April 1983, 23 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-35-33)
380. Williams, David H.: Time-Based Self-Spacing Techniques Using Cockpit Display of Traffic Information During Approach to Landing in a Terminal Area Vectoring Environment. NASA TM-84601, April 1983, 41 p.  
(Avail: NTIS                      Subject Category 06                      RTOP 505-35-23)
381. Williams, David H.; and \*Moen, Gene C.: Simulation Study of Traffic-Sensor Noise Effects on Utilization of Traffic Situation Display for Self-Spacing Task. NASA TP-2082, AVRADCOM TR 82-B-8, February 1983, 34 p.  
(Avail: NTIS                      Subject Category 06                      RTOP 505-35-23)
382. Young, James C.; Bundick, W. Thomas; and Irwin, Stewart H.: Results From Tests, With Van-Mounted Sensor, of Magnetic Leader Cable for Aircraft Guidance During Roll-Out and Turnoff. NASA TP-2092, January 1983, 37 p.  
(Avail: NTIS                      Subject Category 06                      RTOP 534-04-13)

#### Quick-Release Technical Memorandums

383. Belcastro, Celeste M.: Digital System Upset - The Effects of Simulated Lightning-Induced Transients on a General-Purpose Microprocessor. NASA TM-84652, April 1983, 32 p.  
(Avail: NTIS                      Subject Category 62                      RTOP 505-34-13)
384. Thomas, Mitchel E.; and Pitts, Felix L.: 1982 Direct Strike Lightning Data. NASA TM-84626, March 1983, 490 p.  
(Avail: IAC                      Subject Category 47                      RTOP 505-45-03)

---

\*Army Structures Laboratory, USARTL (AVRADCOM)

385. Vicroy, Dan D.; and Knox, Charles E.: Description of the Computations and Pilot Procedures for Planning Fuel-Conservative Descents With a Small Programmable Calculator. NASA TM-85642, May 1983, 36 p.  
(Avail: NTIS Subject Category 06 RTOP 534-04-13)

#### Contractor Reports

386. Anon.: OPTIM - Computer Program to Generate a Vertical Profile Which Minimizes Aircraft Fuel Burn or Direct Operating Cost - User's Guide. (NAS1-15497 Analytical Mechanics Associates, Inc.) NASA CR-166061, May 1983, 117 p.  
(Avail: NTIS Subject Category 03 RTOP 534-04-13)
387. Anon.: TRAGEN - Computer Program to Simulate an Aircraft Steered to Follow a Specified Vertical Profile - User's Guide. (NAS1-15497 Analytical Mechanics Associates, Inc.) NASA CR-166062, May 1983, 67 p.  
(Avail: NTIS Subject Category 03 RTOP 534-04-13)
388. Bar-Gill, Aharon: Longitudinal Flying Qualities Criteria for Single-Pilot Instrument Flight Operations. (NAS1-15764 Princeton University.) NASA CR-166084, July 1983, 249 p.  
(Avail: NTIS Subject Category 05 RTOP 505-35-23)
389. Broussard, John R.: ATOPS B-737 Inner-Loop Control System Linear Model Construction and Verification. (NAS1-15759 Information & Control Systems, Inc.) NASA CR-166055, February 1983, 65 p.  
(Avail: NTIS Subject Category 08 RTOP 505-45-33)
390. Broussard, John R.: Design, Implementation and Flight Testing of PIF Autopilots for General Aviation Aircraft. (NAS1-16303 Information and Control Systems, Inc.) NASA CR-3709, July 1983, 180 p.  
(Avail: NTIS Subject Category 08 RTOP 505-34-13)
391. Broussard, John R.: PIFCGT - A PIF Autopilot Design Program for General Aviation Aircraft. (NAS1-16303 Information and Control Systems, Inc.) NASA CR-166123, December 1983, 176 p.  
(Avail: IAC Subject Category 08 RTOP 505-34-13)
392. Broussard, John R.; and Stallman, Steven T.: Modification and Verification of an ACSL Simulation of the ATOPS B-737 Research Aircraft. (NAS1-15759 Information & Control Systems, Inc.) NASA CR-166049, February 1983, 48 p.  
(Avail: STIF Subject Category 08 RTOP 505-45-33)
393. Chapman, G. Courtney: A Summary and Integration of Research Concerning Single Pilot IFR Operational Problems. (NAG1-238 The Ohio State University.) NASA CR-3716, August 1983, 76 p.  
(Avail: NTIS Subject Category 03 RTOP 505-35-23)
394. Giri, D. V.; Noss, R. S.; Phuoc, D. B.; and Tesche, F. M.: Analysis of Direct and Nearby Lightning Strike Data for Aircraft. (NAS1-16893 LuTech, Inc.) NASA CR-172127, June 1983, 204 p.  
(Avail: IAC Subject Category 47 RTOP 505-45-03)

395. Halyo, Nesim: Terminal Area Automatic Navigation, Guidance and Control Research Using the Microwave Landing System (MLS), Part 5 - Design and Development of a Digital Integrated Automatic Landing System (DIALS) for Steep Final Approach Using Modern Control Techniques. (NAS1-15116 Analytical Mechanics Associates, Inc.) NASA CR-3681, April 1983, 84 p. (Avail: NTIS Subject Category 08 RTOP 505-45-33)
396. Heady, Billy D.; and Zeisel, Keith S.: NASA F-106B Lightning Tests. (NAS1-16202 McDonnell Aircraft Company.) NASA CR-166057, January 1983, 82 p. (Avail: NTIS Subject Category 47 RTOP 505-34-43)
397. Jones, Dennis H.; Coates, Glynn D.; and Kirby, Raymond H.: The Effectiveness of an Oculometer Training Tape on Pilot and Copilot Trainees in a Commercial Flight Training Program. (NAS1-15648 Old Dominion University.) NASA CR-3666, March 1983, 78 p. (Avail: NTIS Subject Category 53 RTOP 534-04-13)
398. Jones, Dennis; Coates, Glynn D.; and Kirby, Raymond H.: The Effectiveness of Incorporating a Real-Time Oculometer System in a Commercial Flight Training Program. (NCC1-57 Old Dominion University.) NASA CR-3667, March 1983, 44 p. (Avail: NTIS Subject Category 53 RTOP 534-04-13)
399. Lala, Jaynarayan H.; and Smith, T. Basil, III: Development and Evaluation of a Fault-Tolerant Multiprocessor (FTMP) Computer, Volume II - FTMP Software. (NAS1-15336 The Charles Stark Draper Laboratory, Inc.) NASA CR-166072, May 1983, 234 p. (Avail: IAC Subject Category 62 RTOP 505-34-13)
400. Lala, Jaynarayan H.; and Smith, T. Basil, III: Development and Evaluation of a Fault-Tolerant Multiprocessor (FTMP) Computer, Volume III - FTMP Test and Evaluation. (NAS1-15336 The Charles Stark Draper Laboratory, Inc.) NASA CR-166073, May 1983, 115 p. (Avail: IAC Subject Category 62 RTOP 505-34-13)
401. Lancraft, R. E.; and Caglayan, A. K.: FINDS: A Fault Inferring Nonlinear Detection System - User's Guide. (NAS1-16579 Bolt Beranek and Newman Inc.) NASA CR-172199, September 1983, 111 p. (Avail: NTIS Subject Category 04 RTOP 505-34-13)
402. Levitt, Karl N.; Melliard-Smith, P. Michael; and Schwartz, Richard L.: Fault Tolerant Architectures for Integrated Aircraft Electronics Systems. (NAS1-17067 SRI International.) NASA CR-172226, August 1983, 56 p. (Avail: NTIS Subject Category 62 RTOP 505-34-43)
403. McGough, John G.: Feasibility Study for a Generalized Gate Logic Software Simulator. (NAS1-15946 Bendix Corporation.) NASA CR-172159, July 1983, 104 p. (Avail: NTIS Subject Category 59 RTOP 505-34-43)

404. McGough, John G.; and Swern, Fred L.: Measurement of Fault Latency in a Digital Avionic Mini Processor - Part II. (NAS1-15946 Bendix Corporation.) NASA CR-3651, January 1983, 94 p.  
(Avail: NTIS Subject Category 59 RTOP 505-34-43)
405. Melliar-Smith, P. Michael: Development of Software Fault-Tolerance Techniques. (NAS1-15480 SRI International.) NASA CR-172122, March 1983, 65 p.  
(Avail: NTIS Subject Category 61 RTOP 505-34-13)
406. Motyka, Paul: Reliability Analysis and Fault-Tolerant System Development for a Redundant Strapdown Inertial Measurement Unit. (NAS1-16887 The Charles Stark Draper Laboratory, Inc.) NASA CR-166050, March 1983, 69 p.  
(Avail: NTIS Subject Category 04 RTOP 505-34-13)
407. Parkinson, Richard C. H.: A Fuel-Efficient Cruise Performance Model for General Aviation Piston Engine Airplanes. (NGL 31-001-252 Princeton University.) NASA CR-172188, August 1983, 398 p.  
(Avail: NTIS Subject Category 07 RTOP 505-34-13)
408. Rose, D. M.; Altschul, R. E.; Manke, J. W.; and Nelson, D. L.: Review and Verification of CARE III Mathematical Model and Code: Interim Report. (NAS1-16900 Boeing Computer Services Company.) NASA CR-166096, April 1983, 185 p.  
(Avail: NTIS Subject Category 59 RTOP 505-34-43)
409. Rose, D. M.; Manke, J. W.; Altschul, R. E.; and Nelson, D. L.: Correlation and Improvement of CARE III, Version 3. (NAS1-16900 Boeing Computer Services Company.) NASA CR-166122, April 1983, 79 p.  
(Avail: NTIS Subject Category 59 RTOP 505-34-43)
410. Rose, J.; Pozner, A. N.; and Fairfield, R. C.: Cost and Benefits Optimization Model for Fault-Tolerant Aircraft Electronic Systems. (NAS1-16669 Boeing Commercial Airplane Company.) NASA CR-166043, January 1983, 279 p.  
(Avail: IAC Subject Category 83 RTOP 534-02-13)
411. Rudolph, T. H.; and Perala, R. A.: Linear and Nonlinear Interpretation of the Direct Strike Lightning Response of the NASA F106B Thunderstorm Research Aircraft. (NAS1-16984 Electro Magnetic Applications, Inc.) NASA CR-3746, December 1983, 168 p.  
(Avail: IAC Subject Category 47 RTOP 505-45-03)
412. Schwartz, R. L.; Melliar-Smith, P. M.; Vogt, F. H.; and Plaisted, D. A.: An Interval Logic for Higher-Level Temporal Reasoning. (NAS1-17067 SRI International.) NASA CR-172262, September 1983, 86 p.  
(Avail: NTIS Subject Category 61 RTOP 505-34-13)
413. Sexton, George A.: Crew Systems and Flight Station Concepts for a 1995 Transport Aircraft. (NAS1-16199 Lockheed-Georgia Company.) NASA CR-166068, April 1983, 427 p.  
(Avail: IAC Subject Category 04 RTOP 534-04-13)

414. Smith, T. Basil, III; and Lala, Jaynarayan H.: Development and Evaluation of a Fault-Tolerant Multiprocessor (FTMP) Computer, Volume I - FTMP Principles of Operation. (NAS1-15336 The Charles Stark Draper Laboratory, Inc.) NASA CR-166071, May 1983, 122 p.  
(Avail: IAC Subject Category 62 RTOP 505-34-13)
415. Sorensen, John A.; Waters, Mark H.; and Patmore, Leda C.: Computer Programs for Generation and Evaluation of Near-Optimum Vertical Flight Profiles. (NAS1-15497 Analytical Mechanics Associates, Inc.) NASA CR-3688, May 1983, 152 p.  
(Avail: NTIS Subject Category 05 RTOP 534-04-13)
416. Stern, A. D.; and Carlin, C. M.: Study of Integrated Airframe/Propulsion Control System Architectures (IAPSA), Volume I - Executive Summary. (NAS1-16942 Boeing Military Airplane Company.) NASA CR-172173, October 1983, 45 p.  
(Avail: STIF Subject Category 08 RTOP 505-43-13)
417. Stern, A. D.; and Carlin, C. M.: Study of Integrated Airframe/Propulsion Control System Architectures (IAPSA), Volume II - System Requirements and Development. (NAS1-16942 Boeing Military Airplane Company.) NASA CR-172174, October 1983, 237 p.  
(Avail: STIF Subject Category 08 RTOP 505-43-13)
418. Stern, A. D.; and Carlin, C. M.: Study of Integrated Airframe/Propulsion Control System Architectures (IAPSA), Volume III - AIRLAB Experiment Definition. (NAS1-16942 Boeing Military Airplane Company.) NASA CR-172175, October 1983, 41 p.  
(Avail: STIF Subject Category 08 RTOP 505-43-13)
419. Taback, I.; Braslow, A. L.; and Butterfield, A. J.: Circulation Control Propellers for General Aviation, Including a BASIC Computer Program. (NAS1-16978 The Bionetics Corporation.) NASA CR-165968, April 1983, 91 p.  
(Avail: IAC Subject Category 02 RTOP 505-34-13)
420. Tole, J. R.; Stephens, A. T.; Vivaudou, M.; Ephrath, A.; and Young, L. R.: Visual Scanning Behavior and Pilot Workload. (NCC1-23 Massachusetts Institute of Technology.) NASA CR-3717, August 1983, 52 p.  
(Avail: NTIS Subject Category 53 RTOP 503-35-23)
421. Van Landingham, H. F.; Moose, Richard L.; Zwicke, Phillip E.; Lucas, William H.; and Brinkley, J. D.: Study of an Automatic Trajectory Following Control System. (NSG-1354 Virginia Polytechnic Institute and State University.) NASA CR-166121, July 1983, 85 p.  
(Avail: NTIS Subject Category 08 RTOP 505-45-33)
422. Weislogel, G. S.: Study to Determine the IFR Operational Profile and Problems of the General Aviation Single Pilot. (NAS1-15969 The Ohio State University.) NASA CR-3576, February 1983, 68 p.  
(Avail: NTIS Subject Category 03 RTOP 505-35-23)

#### Journal Articles and Other Publications

423. Garner, H. Douglas: Low Cost Fluidic Sensors. AGARDograph AG. 272 on Advances in Sensors and Their Integration Into Aircraft Guidance and Control Systems, AGARD Report No. 272, June 1983, p. 6-1 - 6-10.  
(Subject Category 08 RTOP 505-41-63)

#### Meeting Presentations

424. Abbott, Terence S.: Simulation of a Cockpit Display for Increased Airport Capacity. Presented at the 27th Annual Meeting of the Human Factors Society, October 10-14, 1983, Norfolk, Virginia. In Proceedings, Volume II, p. 777-781.  
(Subject Category 06 RTOP 505-35-23)
425. Bavuso, Salvatore J.: Reliability and Maintainability Assessment Factors for Reliable Fault-Tolerant Systems. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 59 RTOP 505-34-13)
426. Belcastro, Celeste M.: Digital System Upset - The Effects of Simulated Lightning-Induced Transients on a General Purpose Microprocessor. Presented at the NASA/FAA/et al., 8th International Aerospace and Ground Conference on Lightning and Static Electricity, June 21-23, 1983, Fort Worth, Texas. (Available as NASA TM-84652.)  
(Subject Category 47 RTOP 505-34-13)
427. Bergeron, Hugh P.; and Hinton, David A.: Aircraft Automation: The Problem of the Pilot Interface. Presented at the Ohio State University Second Symposium on Aviation Psychology, April 26-27, 1983, Columbus, Ohio. Proceedings Pending.  
(Subject Category 08 RTOP 505-35-73)
428. Butler, Ricky W.: As Assessment of the Real-Time Application Capabilities of the SIFT Computer System. Presented at the General Electric Company Second Annual Reliable and Fault-Tolerant System Seminar, April 20, 1983, Charlottesville, Virginia. (Available as NASA TM-84482.)  
(Subject Category 61 RTOP 505-34-13)
429. Creedon, J. F.: Flight Management Systems: What are They and Why are They Being Developed? Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2235-CP.  
(Subject Category 08 RTOP 534-04-13)
430. Groom, Nelson J.: Annular Momentum Control Device (AMCD). Presented at the OAST Integrated Flywheel Technology Workshop, August 2-3, 1983, Greenbelt, Maryland. In NASA CP 2290.  
(Subject Category 18 RTOP 506-57-33)

431. Holt, H. Milton: Validation Methods for Flight Crucial Systems. Presented at the 1983 SAE Aerospace Congress & Exposition, October 3-6, 1983, Long Beach, California. SAE Paper No. 831421. Proceedings Pending.  
(Subject Category 05 RTOP 505-34-13)
432. Howell, W. E.; Bundick, W. T.; Hueschen, R. M.; and Ostroff, Aaron J.: Restructurable Controls for Aircraft. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2255-CP.  
(Subject Category 08 RTOP 505-34-13)
433. Hueschen, Richard M.: Flight Test Results for the Digital Integrated Automatic Landing System (DIALS)-A Modern Control Full-State Feedback Design. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 08 RTOP 505-43-33)
434. Knox, Charles E.: Application of Fuel/Time Minimization Techniques to Route Planning and Trajectory Optimization. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 06 RTOP 534-04-13)
435. Lee, Larry D.: Some Methods of Estimating a Coverage Parameter. Presented at the IEEE 16th Annual Aerospace and Electronics Conference and Exposition (EASCON '83), September 19-21, 1983, Washington, DC. In Proceedings.  
(Subject Category 65 RTOP 505-34-13)
436. McGough, John G.; Swern, Fred L.; and Bavuso, Salvatore J.: New Results in Fault Latency Modelling. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2303-CP.  
(Subject Category 59 RTOP 505-34-13)
437. McGough, John G.; Swern, Fred L.; and Bavuso, Salvatore J.: New Results in Fault-Latency Modelling. Presented at the IEEE 16th Annual Aerospace and Electronics Conference and Exposition (EASCON '83), September 19-21, 1983, Washington, DC. In Proceedings.  
(Subject Category 59 RTOP 505-34-13)
438. McKissick, B. T.; Ashworth, B. R.; and Parrish, R. V.: An Investigation of Motion Base Cueing and G-Seat Cueing on Pilot Performance in a Simulator. Presented at the AIAA Flight Simulation Technologies Conference, June 13-15, 1983, Niagara Falls, New York. AIAA Paper No. 83-1084.  
(Subject Category 05 RTOP 505-35-33)
439. Migneault, G. E.: On Requirements for Software Fault Tolerance for Flight Controls. Presented at the AIAA Computers in Aerospace IV Conference, October 24-26, 1983, Hartford, Connecticut. AIAA Paper No. 83-2321-CP.  
(Subject Category 66 RTOP 505-34-13)

440. Montoya, R. Jorge; Lane, Harold H., Jr.; Turner, Timothy L.; and Hatfield, Jack J.: The Application of a Color, Raster Scan, Programmable Display Generator in the Generation of Multiple Cockpit Display Formats. Presented at the IEEE/AIAA 5th Digital Avionics Systems Conference, October 31 - November 3, 1983, Seattle, Washington. IEEE/AIAA Paper No. 83-157.  
(Subject Category 05 RTOP 505-34-13)
441. Morello, S. A.; and Steinmetz, G. G.: Flight Management of Advanced Systems in the Crew Station. Presented at the IEEE/AIAA 5th Digital Avionics Systems Conference, October 31 - November 3, 1983, Seattle, Washington. IEEE/AIAA Paper No. 19.5.  
(Subject Category 06 RTOP 534-04-13)
442. Morrell, Frederick R.; and Motyka, Paul: Unified Analysis Methods for a Fault Tolerant Redundant Strapdown Inertial Measurement Unit. Presented at the IEEE/AIAA Fifth Digital Avionics Systems Conference, October 31 - November 3, 1983, Seattle, Washington. IEEE/AIAA Paper No. 21.6.  
(Subject Category 04 RTOP 505-34-13)
443. Palumbo, Daniel L.; and Butler, Ricky W.: SIFT - A Preliminary Evaluation. Presented at the IEEE/AIAA 5th Digital Avionics Systems Conference, October 31 - November 3, 1983, Seattle, Washington. IEEE/AIAA Paper No. 21.4.  
(Subject Category 62 RTOP 505-34-13)
444. Sorensen, John A.; and Morello, Samuel A.: Flight Management Concepts Development for Fuel Conservation. Presented at the XVI International Aeronautical Congress-6th International Symposium on Airbreathing Engines, June 6-10, 1983, Paris, France. In Proceedings.  
(Subject Category 03 RTOP 534-04-13)
445. Spady, Amos A., Jr.; and Harris, Randall, L., Sr.: Summary of NASA Langley's Pilot Scan Behavior Research. Presented at the 1983 SAE Aerospace Congress & Exposition, October 3-6, 1983, Long Beach, California. SAE Paper No. 831424. Proceedings Pending.  
(Subject Category 53 RTOP 505-35-01)
446. Spady, Amos A., Jr.; and Harris, Randall L., Sr.: Pilot's Scanning Behavior and Performance. Presented at the Air Line Pilots Association, Beyond Pilot Era: A Symposium of Scientific Focus, December 6-8, 1983, Washington, DC. Proceedings Pending.  
(Subject Category 53 RTOP 505-35-13)
447. Spady, Amos A., Jr.; Harris, Randall L., Sr.; and Comstock, Raymond: Flight Versus Simulator Scan Behavior. Presented at the Ohio State University Second Symposium on Aviation Psychology, April 26-27, 1983, Columbus, Ohio.  
(Subject Category 53 RTOP 534-04-13)
448. Spencer, J. Larry: State-of-the-Art Survey of Multimode Fiber Optic Wavelength Division Multiplexing. Presented at the PHOTON '83, SPIE/SFLM International Conference-Exhibition on Optical Fibers and Their Applications, May 16-19, 1983, Paris, France. SPIE Paper No. 403-14.  
(Subject Category 33 RTOP 505-34-13)



449. Spitzer, Cary R.: The All-Electric Aircraft - A Systems View and Proposed Research Programs. Presented at the IEEE/AESS Dayton Chapter Fifth Annual Symposium on "An All-Electric Aircraft," November 30, 1983, Dayton, Ohio. In Proceedings, Volume II.  
(Subject Category 01 RTOP 505-45-73)
450. Waller, Marvin C.: A Model of a Pilot State Estimation Based on Sequential Instrument Readings. Presented at the 27th Annual Meeting of the Human Factors Society, October 10-14, 1983, Norfolk, Virginia. In Proceedings, Volume II, p. 964.  
(Subject Category 54 RTOP 505-35-23)
451. Williams, David H.: Self-Separation in Terminal Areas Using CDTI. Presented at the 27th Annual Meeting of the Human Factors Society, October 10-14, 1983, Norfolk, Virginia. In Proceedings, Volume II, p. 772-776.  
(Subject Category 06 RTOP 505-35-23)

#### Technical Talks

452. Bavuso, Salvatore J.: Computer-Aided Reliability Estimation Techniques for Fault-Tolerant Systems. Presented at the NSIA/AIA/NASA/USAF Space Division, Mission Assurance Conference and Workshops, June 7-9, 1983, Los Angeles, California.  
(Subject Category 59 RTOP 505-34-13)
453. Bergeron, Hugh P.: NASA Langley Single Pilot Flight Management Program Review. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas.  
(Subject Category 01 RTOP 505-35-73)
454. Butler, Ricky W.: Critical Issues in Real-Time Operating Systems. Presented at the IEEE 1983 Real-Time Systems Symposium, December 7, 1983, Arlington, Virginia.  
(Subject Category 59 RTOP 505-34-13)
455. Butler, Ricky W.: Fault-Tolerant Operating Systems Research in Airlab. Presented at the IEEE Computer Society Workshop on Laboratories for Reliable Systems Research, April 27-29, 1983, Hampton, Virginia.  
(Subject Category 61 RTOP 505-34-13)
456. Joyner, Plez A.: Informational Base Computer Program for the T-39 Experimental Flight Systems. Presented at the National Technical Association Student Technical Symposium, April 14-16, 1983, Ft. Meade, Maryland.  
(Subject Category 09 RTOP 534-04-13)
457. Migneault, Gerard E.: Software Fault Tolerance Techniques Applied to Quality Assurance. Presented at the NSIA/AIA/NASA/USAF Space Division, Mission Assurance Conference and Workshops, June 7-9, 1983, Los Angeles, California.  
(Subject Category 66 RTOP 505-34-13)

458. Robertson, James B.: Electronic Flat-Panel Display Technology for Aircraft. Presented at the 59th Annual Joint Meeting of the Virginia Engineering and Technical Societies, May 13-14, 1983, Williamsburg, Virginia.  
(Subject Category 06      RTOP 505-34-13)
459. Spitzer, Cary R.: Update on Planetary Exploration. Presented at the 59th Annual Joint Meeting of the Virginia Engineering and Technical Societies, May 13-14, 1983, Williamsburg, Virginia.  
(Subject Category 91      RTOP 505-34-23)
460. Spitzer, Cary R.: Planetary Exploration. Presented at the NASA/ASEE Summer Faculty Research Program Lecture Series, June 14, 1983, Hampton, Virginia.  
(Subject Category 91      RTOP 505-34-23)
461. Taylor, Joan V.: A Synchronization Monitor for a Software-Implemented Fault-Tolerance (SIFT) Computer. Presented at the National Technical Association Student Technical Symposium, July 25-30, 1983, Kissimmee, Florida.  
(Subject Category 08      RTOP 505-34-13)

#### Computer Programs

No computer programs.

#### Tech Briefs

462. Knox, Charles E.: Fuel-Conservative Descents Using a Small Programmable Calculator. NASA Tech Brief LAR-13138.
463. White, Michael J.; and Kolb, William (ARINC Research Corporation): The ARINC Research Concept Evaluation Methodology Program. NASA Tech Brief LAR-13143.

#### Patents

464. Garner, H. Douglas: Magnetic Heading Reference. U.S. Patent 4,418,480. Issued December 6, 1983.  
(Subject Category 06)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR STRUCTURES

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

465. Goetz, Robert C.: Evolutionary Application of Composites. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada.  
(Subject Category 24 RTOP 505-33-33)

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

## PUBLICATIONS FOR MATERIALS DIVISION

### Formal Reports

466. Elber, Wolf: Failure Mechanics in Low-Velocity Impacts on Thin Composite Plates. NASA TP-2152, May 1983, 25 p.  
(Avail: NTIS Subject Category 24 RTOP 506-53-23)
467. Johnson, W. S.; Bigelow, C. A.; and Bahei-El-Din, Y. A.: Experimental and Analytical Investigation of the Fracture Processes of Boron/Aluminum Laminates Containing Notches. NASA TP-2187, September 1983, 43 p.  
(Avail: NTIS Subject Category 24 RTOP 505-33-33)
468. Royster, Dick M.; Bales, Thomas T.; Davis, Randall C.; and Wiant, H. Ross: Fabrication and Evaluation of Cold-Formed/Weld-Brazed Beta-Titanium Skin-Stiffened Compression Panels. NASA TP-2201, September 1983, 27 p.  
(Avail: NTIS Subject Category 26 RTOP 505-43-43)
469. Royster, Dick M.; and Bales, Thomas T.: Elevated Temperature Behavior of Superplastically Formed/Weld-Brazed Titanium Compression Panels Having Advanced Shaped Stiffeners. NASA TP-2123, March 1983, 28 p.  
(Avail: NTIS Subject Category 26 RTOP 505-43-43)

### Quick-Release Technical Memorandums

470. \*Baker, Donald J.: Flight Service Evaluation of Composite Components on Bell 206L and Sikorsky S-76 Helicopters. NASA TM-84637, AVRADCOM TR-83-B-1, March 1983, 13 p.  
(Avail: NTIS Subject Category 24 RTOP 505-42-23)
471. Blackburn, Linda B.: Creep Testing of Foil-Gage Metals at Elevated Temperature Using an Automated Data Acquisition System. NASA TM-84634, March 1983, 22 p.  
(Avail: NTIS Subject Category 26 RTOP 505-33-13)
472. Burks, Harold D.; and St. Clair, Terry L.: Synthesis and Characterization of a Polyethersulfoneimide. NASA TM-84621, April 1983, 26 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)
473. Dexter, H. Benson; and Huston, Robert J.: Assessment of Advanced Materials for Rotorcraft. NASA TM-85675, August 1983, 31 p.  
(Avail: STIF Subject Category 24 RTOP 505-42-23)
474. \*Farley, Gary L.: Energy Absorption of Composite Materials. NASA TM-84638, AVRADCOM TR-83-B-2, March 1983, 8 p.  
(Avail: NTIS Subject Category 24 RTOP 505-42-23)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

475. \*Hodges, W. T.; and St. Clair, T. L.: Ultrasonic Mixing of Epoxy Curing Agents. NASA TM-85643, AVRADCOM TR 83-B-3, May 1983, 18 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)
476. Johnson, W. S.; and Mall, S.: A Fracture Mechanics Approach for Designing Adhesively Bonded Joints. NASA TM-85694, September 1983, 21 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-33)
477. Mall, S.; and Newman, J. C., Jr.: The Dugdale Model for the Compact Specimen. NASA TM-85714, October 1983, 30 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-23)
478. Messick, D. L.; Progar, D. J.; and Wightman, J. P.: Surface Analysis of Graphite Reinforced Polyimide Composites. NASA TM-85700, October 1983, 20 p.  
(Avail: NTIS Subject Category 24 RTOP 506-53-23)
479. \*O'Brien, T. Kevin: Mixed-Mode Strain-Energy-Release Rate Effects on Edge Delamination of Composites. NASA TM-84592, January 1983, 38 p.  
(Avail: NTIS Subject Category 24 RTOP 506-53-23)
480. Schwantes, Stephan; and Elber, Wolf: Slow Crack Growth in Spinel in Water. NASA TM-85644, May 1983, 44 p.  
(Avail: NTIS Subject Category 27 RTOP 534-03-23)
481. Shivakumar, K. N.; Elber, W.; and Illg, W.: Prediction of Impact Force and Duration During Low Velocity Impact on Circular Composite Laminates. NASA TM-85703, October 1983, 32 p.  
Avail: NTIS Subject Category 24 RTOP 506-53-23)
482. Stoakley, Diane M.; and St. Clair, Anne K.: Cobalt Ion-Containing Epoxies. NASA TM-85715, November 1983, 14 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)
483. St. Clair, Anne K.; and St. Clair, Terry L.: The Development of Aerospace Polyimide Adhesives. NASA TM-84587, January 1983, 27 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)
484. Taylor, Larry T.; and St. Clair, Anne K.: Mechanical and Spectroscopic Properties of Metal-Containing Polyimides. NASA TM-84586, January 1983, 29 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)
485. Whitcomb, John D.: Strain Energy Release Rate Analysis of Cyclic Delamination Growth in Compressively Loaded Laminates. NASA TM-84598, January 1983, 38 p.  
(Avail: NTIS Subject Category 24 RTOP 505-33-33)

486. Whitcomb, John D.; and Raju, I. S.: Superposition Method for Analysis of Free-Edge Stresses. NASA TM-85657, June 1983, 32 p.  
(Avail: NTIS Subject Category 24 RTOP 505-33-23)

#### Contractor Reports

487. Boduroglu, H.; and Erdogan, F.: Internal and Edge Cracks in a Plate of Finite Width Under Bending. (NGR 39-007-011 Lehigh University.) NASA CR-166094, March 1983, 26 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-33)
488. Cunnington, G. R.; Funai, A. I.; and McNab, T. K.: Radiative Properties of Advanced Spacecraft Heat Shield Materials. (NAS1-16423 Lockheed Missiles and Space Company, Inc.) NASA CR-3740, November 1983, 198 p.  
(Avail: NTIS Subject Category 26 RTOP 506-53-33)
489. Goree, James G.; and Dharani, Lokeswarappa R.: Shear-Lag Analysis of a Hybrid, Unidirectional Composite With Fiber Damage. (NSG-1297 Clemson University.) NASA CR-3682, April 1983, 56 p.  
(Avail: NTIS Subject Category 24 RTOP 506-53-23)
490. Goree, James G.; and Jones, Walter F.: Fracture Behavior of Unidirectional Boron/Aluminum Composite Laminates. (NSG-1297 Clemson University.) NASA CR-3753, December 1983, 112 p.  
(Avail: NTIS Subject Category 24 RTOP 506-53-23)
491. Green, H. E.: Studies to Modify Bismaleimide Laminating Resins. (NAS1-16797 TRW Energy Development Group.) NASA CR-172193, March 1983, 40 p.  
(Avail: STIF Subject Category 24 RTOP 505-33-33)
492. Hanky, Annemarie O.: Acetylene-Terminated Polyimide Adhesive. (NAS1-16000 Kentron Technical Center.) NASA CR-166075, February 1983, 23 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)
493. Harris, C. E.; and Morris, D. H.: An Evaluation of the Effects of Stacking Sequence and Thickness on the Fatigue Life of Quasi-Isotropic Graphite/Epoxy Laminates. (NAG1-264 Virginia Polytechnic Institute and State University.) NASA CR-172169, April 1983, 111 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-23)
494. Harrison, Ernest, Jr.: Orthotic Devices Using Lightweight Composite Materials. (NAS1-15477 Mississippi Methodist Rehabilitation Center.) NASA CR-166105, January 1983, 72 p.  
(Avail: NTIS Subject Category 52 RTOP 141-20-20)
495. Hill, S. G.; and Hendricks, C. L.: Evaluation of High Temperature Structural Adhesives for Extended Service - Phase III. (NAS1-15605 Boeing Aerospace Company.) NASA CR-172163, July 1983, 44 p.  
(Avail: NTIS Subject Category 27 RTOP 505-33-33)

496. Hudak, S. J., Jr.; Davidson, D. L.; and Chan, K. S.: Measurement and Analysis of Critical Crack Tip Processes Associated With Variable Amplitude Fatigue Crack Growth. (NAS1-16954 Southwest Research Institute.) NASA CR-172228, September 1983, 70 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-23)
497. Humphreys, E. A.; and Goering, J.: Development of an Analytic Procedure to Calculate Damage Accumulation in Composites During Low Velocity Impact. (NAS1-15888 Materials Sciences Corporation.) NASA CR-166086, May 1983, 85 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 534-03-23)
498. Hyer, M. W.; and Liu, D. H.: Stresses in a Quasi-Isotropic Pin Loaded Connector Using Photoelasticity. (NSG-1621 Virginia Polytechnic Institute and State University.) NASA CR-172135, August 1983, 23 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-42-23)
499. Joseph, Paul F.: Viscoelastic Study of an Adhesively Bonded Joint. (NGR 39-007-011 Lehigh University.) NASA CR-172124, April 1983, 139 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-42-39)
500. Kaneko, R. S.; and Woods, C. A.: Low-Temperature Forming of Beta Titanium Alloys. (NAS1-15568 Lockheed-California Company.) NASA CR-3706, September 1983, 214 p.  
(Avail: NTIS                      Subject Category 26                      RTOP 505-43-43)
501. Lindenmeyer, Paul H.: A Proposed Approach to the Application of Nonlinear Irreversible Thermodynamics to Fracture in Composite Materials. (NAS1-16301 Boeing Aerospace Company.) NASA CR-166074, April 1983, 43 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-33-33)
502. Lowry, D. W.; and Rich, M. J.: Design, Fabrication, Installation and Flight Service Evaluation of a Composite Cargo Ramp Skin on a Model CH-53 Helicopter. (NAS1-14447 United Technologies Corporation.) NASA CR-172126, April 1983, 33 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-42-23)
503. Mendelson, Alexander; and Ghosn, Louis: Three-Dimensional Analysis of Chevron-Notched Specimens by Boundary Integral Method. (NAG1-304 Case Western Reserve University.) NASA CR-172225, September 1983, 107 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-23)
504. Morita, W. H.; and Graves, S. R.: Graphite/LARC-160 Technology Demonstration Segment Test Results. (NAS1-15371 Rockwell International Corporation.) NASA CR-172123, June 1983, 128 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 506-53-23)
505. Morris, D. H.; and Simonds, R. A.: The Effect of Extreme Temperatures on the Elastic Properties and Fracture Behavior of Graphite/Polyimide Composites. (NSG-1571 Virginia Polytechnic Institute and State University.) NASA CR-172143, June 1983, 16 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 506-53-23)

506. Ramkumar, R. L.: Performance of a Quantitative Study of Instability-Related Delamination Growth. (NAS1-16727 Northrop Corporation.) NASA CR-166046, March 1983, 98 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 506-53-23)
507. Rochefort, M. A.; and Brinson, Hal F.: Nonlinear Viscoelastic Characterization of Structural Adhesives. (NAG1-227 Virginia Polytechnic Institute and State University.) NASA CR-172279, December 1983, 130 p.  
(Avail: NTIS                      Subject Category 27                      RTOP 505-42-39)
508. Ross, W. D.; Noble, J. E.; Gridley, J. A.; Fullenkamp, J. M.; Wininger, M. T.; and Graham, J. A.: Mutagenic Screening of Diamine Monomers. (NAS1-16246 Monsanto Research Corporation.) NASA CR-166085, February 1983, 87 p.  
(Avail: NTIS                      Subject Category 51                      RTOP 505-33-33)
509. Schenck, Steven C.; and Sancaktar, Erol: Material Characterization of Structural Adhesives in the Lap Shear Mode. (NAG1-284 Clarkson College of Technology.) NASA CR-172237, September 1983, 88 p.  
(Avail: NTIS                      Subject Category 27                      RTOP 505-33-23)
510. Shyprykevich, Peter: Design and Fabrication of Realistic Adhesively Bonded Joints. (NAS1-16952 Grumman Aerospace Corporation.) NASA CR-166099, May 1983, 31 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-42-39)
511. Stone, R. H.: Flight Service Evaluation of Kevlar-49 Epoxy Composite Panels in Wide-Bodied Commercial Transport Aircraft - Ninth Annual Flight Service Report. (NAS1-11621 Lockheed-California Company.) NASA CR-166065, February 1983, 40 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-33-33)
512. Stone, R. H.: Repair Techniques for Graphite/Epoxy Structures for Commercial Transport Applications. (NAS1-15269 Lockheed-California Company.) NASA CR-159056, January 1983, 204 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-33-33)
513. Tennyson, R. C.; and Elliott, W. G.: Failure Analysis of Composite Laminates Including Biaxial Compression. (NSG-7409 University of Toronto.) NASA CR-172192, August 1983, 130 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-42-23)
514. Wang, S. S.; and Choi, I.: The Mechanics of Delamination in Fiber-Reinforced Composite Materials: Part I - Stress Singularities and Solution Structure. (NAG1-286 University of Illinois.) NASA CR-172269, November 1983, 46 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 534-03-23)
515. Wang, S. S.; and Choi, I.: The Mechanics of Delamination in Fiber-Reinforced Composite Materials: Part II - Delamination Behavior and Fracture Mechanics Parameters. (NAG1-286 University of Illinois.) NASA CR-172270, November 1983, 62 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 534-03-23)



516. Yahsi, O. S.; and Erdogan, F.: A Note on the Cracked Plates Reinforced by a Line Stiffener. (NGR 39-007-011 Lehigh University.) NASA CR-166095, January 1983, 13 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-33)
517. Yee, A. F.; and Pearson, R. A.: Toughening Mechanism in Elastomer-Modified Epoxy Resins - Part 1. (NAS1-16132 General Electric Company.) NASA CR-3718, August 1983, 130 p.  
(Avail: NTIS                      Subject Category 27                      RTOP 505-33-43)

#### Journal Articles and Other Publications

518. Bell, Vernon L.; and Pezdirtz, G. F.: Effects of Ionizing Radiation on Linear Aromatic Polyesters. Journal of Polymer Science, Volume 21, No. 11, November 1983, p. 3083-3092.  
(Subject Category 27                      RTOP 505-33-33)
519. \*Everett, Richard A., Jr.: The Role of Peel Stresses in Cyclic Debonding. Adhesives Age, Volume 26, No. 5, May 1983, p. 24-29.  
(Subject Category 39                      RTOP 505-33-33)
520. \*Farley, Gary L.; and \*Baker, Donald J.: In-Plane Shear Test of Thin Panels. Experimental Mechanics, Volume 23, March 1983, p. 81-88.  
(Subject Category 24                      RTOP 532-06-13)
521. Hanky, Annemarie O.; and St. Clair, Terry L.: Acetylene-Terminated Polyimide Adhesives. International Journal of Adhesion and Adhesives, Volume 3, No. 4, October 1983.  
(Subject Category 27                      RTOP 505-33-33)
522. Hergenrother, P. M.: Polyphenylquinoxalines Containing Pendant Phenylethynyl Groups: Preliminary Mechanical Properties. Journal of Applied Polymer Science, Volume 28, No. 1, January 1983, p. 355-366.  
(Subject Category 27                      RTOP 505-33-33)
523. Hodges, W. Todd; and St. Clair, Terry L.: Ultrasonic Mixing of Epoxy Curing Agents. SAMPE Quarterly, Volume 14, No. 3, April 1983, p. 46-50.  
(Subject Category 27                      RTOP 505-33-33)
524. Johnson, W. S.: Damage Tolerance Evaluation of Adhesively Laminated Titanium. Journal of Engineering Materials and Technology, Volume 105, No. 3, July 1983, p. 182-187.  
(Subject Category 39                      RTOP 505-33-23)
525. Maahs, Howard G.: Measurements of the Oxidation Rate of Sulfur (IV) by Ozone in Aqueous Solution and Their Relevance to SO<sub>2</sub> Conversion in Nonurban Tropospheric Clouds. Atmospheric Environment, Volume 17, 1983, p. 341-345.  
(Subject Category 23                      RTOP 307-01-02)

526. Poe, C. C., Jr.: A Unifying Strain Criterion for Fracture of Fibrous Composite Laminates. Engineering Fracture Mechanics, Volume 17, No. 2, 1983, p. 153-171.  
(Subject Category 24 RTOP 505-33-33)
527. Salop, J.; Wakelyn, N. T.; Levy, G. F.; Middleton, W. M.; and Gervin, J. C.: The Application of Forest Classification From Landsat Data as a Basis for Natural Hydrocarbon Emission Estimation and Photochemical Oxidant Model Simulations in Southeastern Virginia. Journal of Air Pollution Control Association, Volume 33, January 1983, p. 17-22.  
(Subject Category 46 RTOP 505-33-33)
528. St. Clair, A. K.; and Taylor, L. T.: A Comparison of Physical and Mechanical Properties of Polyimide Films Containing Different Metal Ions. Journal of Applied Polymer Science, Volume 28, No. 7, 1983, p. 2393-2400.  
(Subject Category 27 RTOP 505-33-33)
529. Wakelyn, N. T.: Observations From an X-Ray Diffraction Study of Poly (Ethylene Terephthalate) Film and Fiber. Journal of Applied Polymer Science, Volume 28, November 1983, p. 3599-3602.  
(Subject Category 27 RTOP 505-33-33)
530. Wakelyn, N. T.; Levy, Gerald F.; and Salop, John: Comment on "The Application of Forest Classification From Landsat Data as a Basis for Natural Hydrocarbon Emission Estimation and Photochemical Oxidant Model Simulations in Southeastern Virginia." Journal of the Air Pollution Control Association, Volume 33, June 1983, p. 606-607.  
(Subject Category 45 RTOP 505-33-33)
531. Young, Philip R.; and Chang, A. C.: Characterization of Geometric Isomers of Norbornene End-Capped Imides. Journal of Heterocyclic Chemistry, Volume 20, January-February 1983, p. 177-182.  
(Subject Category 27 RTOP 505-33-33)

#### Meeting Presentations

532. \*Baker, Donald J.: Flight Service Evaluation of Composite Components on the Bell Model 206L and Sikorsky Model S-76 Helicopters. Presented at the AHS Mideast Region Composite Structures Specialists' Meeting, March 23-25, 1983, Philadelphia, Pennsylvania. Proceedings Pending.  
(Subject Category 24 RTOP 532-06-13)
533. Batten, Carmen E.: Spectral Optical Properties of Soots From Polarized Reflectance Measurements. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina.  
(Subject Category 25 RTOP 307-01-02)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

534. Baucom, Robert M.: Fabrication of GR/PI Corrugated Panels, Tubes, and Hat Section Elements. Presented at the AFWAL High Temperature Polymeric Composite Workshop III, October 26-28, 1983, Miamisburg, Ohio. Proceedings Pending.  
(Subject Category 24 RTOP 505-33-33)
535. Blackburn, Linda B.: Creep Testing of Foil-Gage Metals at Elevated Temperature Using an Automated Data Acquisition System. Presented at the ASTM Seminar on Automated Testing at Elevated Temperatures, "The State-of-the-Art in Automating Mechanical Testing, Especially at Elevated Temperatures," Sponsored by Committee E-28 on Mechanical Testing, March 24, 1983, Louisville, Kentucky. NASA TM-84634.  
(Subject Category 26 RTOP 505-33-13)
536. \*Bostaph, Gretchen M.; and Elber, Wolf: A Fracture Mechanics Analysis for Delamination Growth During Impact on Composite Plates. Presented at the 1983 ASME Winter Annual Meeting, November 13-18, 1983, Boston, Massachusetts. Proceedings Pending.  
(Subject Category 24 RTOP 506-53-23)
537. Brewer, William D.: Effects of Thermal Treatments on the Flexure Properties and Microstructure of SiC<sub>w</sub> 2124 Aluminum Composites. Presented at the American Ceramic Society 7th Annual Conference on Composites and Advanced Materials, January 16-23, 1983, Cocoa Beach, Florida. NASA CP 2291.  
(Subject Category 24 RTOP 505-33-13)
538. Clark, Ronald K.; Webb, Granville, L.; and Dries, Gregory A.: Mechanical/Radiative Performance of Rene' 41 in TPS Applications. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 26 RTOP 506-53-33)
539. Davidson, John R.: Reliability, After Inspection, of Unique Structures. Presented at the ASME/ASQC/IEEE/IEEE, et al., 1983 Annual Reliability and Maintainability Symposium, January 25-27, 1983, Orlando, Florida. In IEEE Proceedings, 1983, p. 361-366.  
(Subject Category 38 RTOP 506-53-23)
540. Deaton, Jerry W.: A Process for Repairing Graphite/Epoxy Structures. Presented at the Army/Navy/AF/NASA/FAA Sixth Conference on Fibrous Composites in Structural Design, January 24-27, 1983, New Orleans, Louisiana. Proceedings Pending.  
(Subject Category 24 RTOP 505-33-33)
541. Deaton, Jerry W.; and Mosso, Nancy A.: Preliminary Evaluation of Large Area Bonding Processes for Repair of Graphite/Polyimide Composites. Presented at the 28th National SAMPE Symposium and Exhibition, April 12-14, 1983, Anaheim, California. In Proceedings, Volume 28, 1983, p. 1425-1442.  
(Subject Category 24 RTOP 506-53-23)

542. Elber, Wolf: The Effect of Matrix and Fiber Properties on Impact Resistance. Presented at the NASA Workshop on Tough Composite Materials, May 24-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 24 RTOP 506-53-23)
543. \*Everett, R. A., Jr.; and Johnson, W. S.: Repeatability of Mixed-Mode Adhesive Debonding. Presented at the ASTM Symposium on Delamination and Debonding of Materials, November 8-10, 1983, Pittsburgh, Pennsylvania. ASTM STP Pending.  
(Subject Category 39 RTOP 505-33-33)
544. \*Farley, Gary L.: Energy Absorption of Composite Material. Presented at the AHS Mideast Region Composite Structures Specialists' Meeting, March 23-25, 1983, Philadelphia, Pennsylvania. Proceedings Pending.  
(Subject Category 24 RTOP 532-06-13)
545. Hanky, Annemarie O.; and St. Clair, Terry L.: Acetylene-Terminated Polyimide Adhesives. Presented at the 28th National SAMPE Symposium and Exhibition, April 12-14, 1983, Anaheim, California. In Proceedings, Volume 28, 1983, p. 711-727.  
(Subject Category 27 RTOP 505-33-33)
546. Havens, S. J.; and Hergenrother, P. M.: Ethynyl-Terminated Polyarylates. Presented at the 186th National Meeting of the American Chemical Society, August 28 - September 2, 1983, Washington, DC. In Polymer Preprints, Volume 24, No. 2, 1983, p. 16-17.  
(Subject Category 27 RTOP 505-33-33)
547. Hergenrother, P. M.: High Temperature Polymers. Presented at the 17th ACS Middle Atlantic Regional Meeting, April 6-8, 1983, White Haven, Pennsylvania.  
(Subject Category 27 RTOP 505-33-33)
548. Hergenrother, P. M.: Status of High Temperature Adhesives. Presented at the American Chemical Society Symposium on Recent Developments in Adhesive Chemistry, March 21-25, 1983, Seattle, Washington. In Organic Coatings and Applied Polymer Science Proceedings, Volume 48, 1983, p. 349-353.  
(Subject Category 27 RTOP 505-33-33)
549. Hergenrother, Paul M.; and Jensen, Brian J.: Ethynyl-Terminated Polysulfones: Preliminary Mechanical Properties. Presented at the American Chemical Society Symposium on Plastics and Composites for Structural Uses, March 21-25, 1983, Seattle, Washington. In Organic Coatings and Applied Polymer Science Proceedings, Volume 48, 1983, p. 914-918.  
(Subject Category 27 RTOP 505-33-33)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

550. Hergenrother, P. M.; Jensen, B. J.; and Havens, S. J.: Phenoxyl Resins Containing Pendant Ethynyl Groups. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina.  
(Subject Category 27 RTOP 505-33-33)
551. Hergenrother, P. M.; Jensen, B. J.; and Havens, S. J.: Solvent Resistant Thermoplastic Composite Matrices. Presented at the NASA Workshop on Tough Composite Materials, May 24-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 27 RTOP 505-33-33)
552. Howell, William E.: Effects of Simulated Lightning Currents on the Tensile Strength of Graphite/Epoxy. Presented at the NASA/FAA et al., 8th International Aerospace and Ground Conference on Lightning and Static Electricity, June 21-23, 1983, Fort Worth, Texas.  
(Subject Category 24 RTOP 505-33-33)
553. Howell, William E.; and Fisher, Bruce D.: Observations of Severe In-Flight Environments on Airplane Composite Structural Components. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830767.  
(Subject Category 24 RTOP 505-33-33)
554. Johnson, W. S.; and Mall, S.: A Fracture Mechanics Approach for Designing Adhesively Bonded Joints. Presented at the ASTM Symposium on Delamination and Debonding of Materials, November 8-10, 1983, Pittsburgh, Pennsylvania. ASTM STP Pending.  
(Subject Category 24 RTOP 505-33-33)
555. Johnston, Norman J.; \*O'Brien, T. Kevin; Morris, Don H.; and Simonds, Robert A.: Interlaminar Fracture Toughness of Composites II - Refinement of the Edge Delamination Test and Application to Thermoplastics. Presented at the 28th National SAMPE Symposium and Exhibition, April 12-14, 1983, Anaheim, California. In Proceedings, Volume 28, 1983, p. 502-517.  
(Subject Category 24 RTOP 505-33-33)
556. Kennedy, J. M.: Tensile Stress-Strain Behavior of Hybrid Composite Laminates. Presented at the 1983 Spring Conference of the Society of Experimental Stress Analysis, May 15-19, 1983, Cleveland, Ohio. In Proceedings, May 1983, p. 272-279.  
(Subject Category 24 RTOP 505-33-33)
557. Kennedy, John M.: Fracture Behavior of Hybrid Composite Laminates. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0804. (In AIAA CP-832, May 1983, p. 68-78.)  
(Subject Category 24 RTOP 505-33-33)

558. Mall, S.; and Newman, J. C., Jr.: The Dugdale Model for the Compact Specimen. Presented at the ASTM Sixteenth National Symposium on Fracture Mechanics, August 15-17, 1983, Columbus, Ohio. ASTM STP Pending.  
(Subject Category 39 RTOP 505-33-23)
559. Messick, D. L.; Progar, D. J.; and Wightman, J. P.: Surface Analysis of Graphite Fiber Reinforced Polyimide Composites. Presented at the 15th National SAMPE Technical Conference, October 4-6, 1983, Cincinnati, Ohio. In Preprint Volume.  
(Subject Category 24 RTOP 506-53-23)
560. Newman, J. C., Jr.: A Review of the Stress-Intensity Factors and Crack-Opening Displacements for the Chevron-Notched Fracture Specimens. Presented at the ASTM Symposium on Chevron-Notched Specimens: Testing and Stress Analysis, April 21, 1983, Louisville, Kentucky. ASTM STP Pending.  
(Subject Category 39 RTOP 505-33-23)
561. \*O'Brien, T. K.: Characterizing Delamination Resistance of Toughened Resin Composites. Presented at the NASA Workshop on Tough Composite Materials, May 24-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 24 RTOP 506-53-23)
562. \*O'Brien, T. Kevin: Analysis of Local Delaminations and Their Influence on Composite Laminate Behavior. Presented at the ASTM Symposium on Delamination and Debonding of Materials, November 8-10, 1983, Pittsburgh, Pennsylvania. ASTM STP Pending.  
(Subject Category 24 RTOP 506-53-23)
563. \*O'Brien, T. Kevin; Johnston, Norman J.; Morris, D. H.; and Simonds, R. A.: Determination of Interlaminar Fracture Toughness and Fracture Mode Dependence of Composites Using the Edge Delamination Test. Presented at the University of Surrey International Conference on Testing, Evaluation, and Quality Control of Composites, September 13-14, 1983, Guildford, England. In Proceedings of the International Conference on Testing, Evaluation and Quality Control of Composites, TEQC83, T. Feest, ed., Butterworth Scientific Ltd., Kent, England, 1983, p. 223-232.  
(Subject Category 24 RTOP 506-53-23)
564. Raju, I. S.; and Newman, J. C., Jr.: Three-Dimensional Finite-Element Analysis of the Chevron-Notched Fracture Specimens. Presented at the ASTM Symposium on Chevron-Notched Specimens: Testing and Stress Analysis, April 21, 1983, Louisville, Kentucky. ASTM STP Pending.  
(Subject Category 39 RTOP 505-33-23)
565. Ramkumar, R. L.; and Whitcomb, J. D.: Characterization of Mode I and Mixed Mode Delamination Growth. Presented at the ASTM Symposium on Delamination and Debonding of Materials, November 8-10, 1983, Pittsburgh, Pennsylvania. ASTM STP Pending.  
(Subject Category 24 RTOP 506-53-23)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

566. Ransone, Philip O.: Stability of Silica Heat Shield Materials in the Space Shuttle Environment. Presented at the American Ceramic Society 7th Annual Conference on Composites and Advanced Materials, January 16-23, 1983, Cocoa Beach, Florida. NASA CP Pending.  
(Subject Category 24 RTOP 506-23-01)
567. Rummler, D. R.: Advanced Carbon-Carbon Materials Research. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 24 RTOP 506-53-33)
568. Shivakumar, K. N.; Elber, W.; and Illg, W.: Analysis of Progressive Damage in Thin Circular Laminates Due to Static-Equivalent Impact Loads. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0997. (In AIAA CP-832, May 1983, p. 606-615.)  
(Subject Category 24 RTOP 505-33-33)
569. St. Clair, T. L.; and Burks, H. D.: Thermoplastic/Melt Processable Polyimides. Presented at the NASA Workshop on Tough Composite Materials, May 24-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 27 RTOP 505-33-33)
570. St. Clair, A. K.; and St. Clair, T. L.: High-Temperature Space Film Adhesives. Presented at the 163rd Meeting of the Electrochemical Society, May 8-13, 1983, San Francisco, California. Extended Abstract No. 245 in Proceedings, Volume 83-1, May 1983.  
(Subject Category 27 RTOP 505-33-33)
571. St. Clair, Anne K.; St. Clair, Terry L.; and Ezzell, Stephen A.: Elastomer-Modified Polyimide Adhesives. Presented at the American Chemical Society Symposium on Recent Developments in Adhesive Chemistry, March 21-25, 1983, Seattle, Washington. In Organic Coatings and Applied Polymer Science Proceedings, Volume 48, 1983, p. 354-358.  
(Subject Category 27 RTOP 505-33-33)
572. St. Clair, Anne K.; and Stoakley, Diane M.: Chromium Ion-Containing Epoxies. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina.  
(Subject Category 27 RTOP 534-03-23)
573. St. Clair, T. L.: Matrix Resin Development at NASA Langley. Presented at the NASA Meeting on High Temperature Polymer Matrix Composites, March 16-18, 1983, Cleveland, Ohio. NASA CP Pending.  
(Subject Category 27 RTOP 505-33-33)
574. Stein, Bland A.; Tompkins, Stephen S.; and Brewer, William D.: A Review of NASA Research on Low Temperature Metal Matrix Composites for Aeronautics and Space. Presented at the DOD Fifth Metal Matrix Composites Technology Conference, May 17-19, 1983, Silver Spring, Maryland. Proceedings Pending.  
(Subject Category 26 RTOP 505-33-13)

575. Stoakley, Diane M.; and St. Clair, Anne K.: Cobalt Ion Containing Epoxies. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina. (Subject Category 27 RTOP 534-03-23)
576. Swann, Robert T.; Wood, George M.; Brown, Ronald D.; Upchurch, B. T.; Miller, I. M.; and Allen, Gayle: Catalytic Activity of Surfaces for Metallic TPS. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending. (Subject Category 26 RTOP 307-03-02)
577. Whitcomb, John D.; and Raju, I. S.: Analysis of Interlaminar Stresses in Thick Composite Laminates With and Without Edge Delamination. Presented at the ASTM Symposium on Delamination and Debonding of Materials, November 8-10, 1983, Pittsburgh, Pennsylvania. ASTM STP Pending. (Subject Category 24 RTOP 505-33-33)
578. Young, Philip R.; and Chang, A. C.: Matrix Resin Characterization in Cured Graphite Composites Using the Diffuse Reflectance - FTIR. Presented at the NASA Workshop on Tough Composite Materials, May 24-26, 1983, Hampton, Virginia. NASA CP Pending. (Subject Category 27 RTOP 505-33-33)
579. Young, Phillip R.; Stein, Bland A.; and Chang, A. C.: Resin Characterization in Cured Graphite Fiber Reinforced Composites Using Diffuse Reflectance FTIR. Presented at the 28th National SAMPE Symposium and Exhibition, April 12-14, 1983, Anaheim, California. In Proceedings, Volume 28, 1983, p. 824-837. (Subject Category 27 RTOP 505-33-33)

#### Technical Talks

580. Bales, Thomas T.; Royster, Dick M.; and Wiant, H. Ross: Brazed Borsic®/Aluminum Structural Panels for High Speed Aircraft. Presented at the 28th National SAMPE Symposium and Exhibition, April 12-14, 1983, Anaheim, California. (Subject Category 24 RTOP 505-33-13)
581. Drewry, L. L.; Brewer, W. D.; and Unnam, J.: Application of Coated Fiber Studies to Silicon-Carbide/Titanium Composites. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia. (Subject Category 24 RTOP 534-03-23)
582. Elber, W.: The Influence of Matrix and Fiber Properties on the Mechanics of Impact Failure. Presented at the California Institute of Technology, Industrial Associates Conference on Polymers and Composites, May 10-12, 1983, Pasadena, California. (Subject Category 24 RTOP 506-53-23)



583. Elber, W.: The Effect of Matrix Properties and Fiber Properties on Impact Failure Mechanics. Presented at the 20th Annual Meeting of the Society of Engineering Science, Inc., August 22-24, 1983, Newark, Delaware.  
(Subject Category 24 RTOP 506-53-23)
584. Elber, Wolf: Impact Damage Mechanisms in Thin Composite Plates. Presented at the Gordon Research Conferences, Inc., 1983 Conference on Composite Materials, January 17-21, 1983, Santa Barbara, California.  
(Subject Category 24 RTOP 506-53-23)
585. Elber, Wolf: Slow Crack Growth in Spinel in Water. Presented at the ASTM Workshop on Fracture Toughness Techniques for Brittle Materials, November 9, 1983, Pittsburgh, Pennsylvania.  
(Subject Category 27 RTOP 506-53-23)
586. \*Everett, Richard A., Jr.: A Fracture Mechanics Approach to the Analysis of Debonding. Presented at the Sixth Annual Meeting of the Adhesion Society, February 21-23, 1983, Savannah, Georgia.  
(Subject Category 39 RTOP 505-33-33)
587. Hergenrother, P. M.: High Temperature Adhesives. Presented at the State University of New York Short Course on Fundamentals of Adhesion: Theory, Practice, and Applications, November 3, 1983, Mohonk Lake, New York.  
(Subject Category 27 RTOP 505-33-33)
588. Hergenrother, P. M.: Recent Advances in Structural Resins for Aerospace Applications. Presented at the Plastics Institute of America, 22nd Annual Meeting and Research Symposium, April 21, 1983, Hoboken, New Jersey.  
(Subject Category 27 RTOP 505-33-33)
589. Hergenrother, P. M.: High Performance High Temperature Polymers. Presented at the Naval Research Laboratory Chemistry Division Lecture Series, April 28, 1983, Washington, DC.  
(Subject Category 27 RTOP 505-33-33)
590. Hergenrother, Paul M.: High Temperature Adhesives. Presented at the Plastics Institute of America, Inc., Intensive Short Course on Advances in Adhesion Sciences and Adhesives, September 28-30, 1983, Boston, Massachusetts.  
(Subject Category 27 RTOP 505-33-33)
591. Johnson, W. S.: Debond Analysis Using Fracture Mechanics--A New Design Approach. Presented at the Gordon Research Conference on the Science of Adhesion, August 22-26, 1983, New Hampton, New Hampshire.  
(Subject Category 39 RTOP 505-33-33)
592. Johnson, W. S.: Fatigue and Fracture Mechanics of Bonded Joints. Presented at the United Technologies Research Center, August 22, 1983, East Hartford, Connecticut.  
(Subject Category 39 RTOP 505-33-33)

593. Johnson, W. S.: Fatigue and Fracture of Adhesive Joints. Presented at the VPI&SU Center for Adhesion Science Workshop/Program Review, May 1-3, 1983, Blacksburg, Virginia.  
(Subject Category 39 RTOP 505-33-33)
594. Johnston, N. J.: Overview of NASA's Toughened Matrix Synthesis Program. Presented at the California Institute of Technology, Industrial Associates Conference on Polymers and Composites, May 10-12, 1983, Pasadena, California.  
(Subject Category 24 RTOP 505-33-33)
595. Johnston, N. J.: Interlaminar Fracture Toughness Studies in Advanced Carbon Fiber Composites. Presented at the California Institute of Technology, Industrial Associates Conference on Polymers and Composites, May 10-12, 1983, Pasadena, California.  
(Subject Category 24 RTOP 505-33-33)
596. Johnston, Norman J.: Application and Problems of Thermosetting Resins in Aerospace Industries. Presented at the Gordon Research Conference on Thermosetting Polymers, August 22-26, 1983, Meridan, New Hampshire.  
(Subject Category 24 RTOP 505-33-33)
597. Newman, J. C., Jr.: Analysis of a Drilled-Compression-Double-Cleavage (DCDC) Specimen. Presented at the ASTM Workshop on Fracture Toughness Techniques for Brittle Materials, November 9, 1983, Pittsburgh, Pennsylvania.  
(Subject Category 39 RTOP 505-33-23)
598. Newman, J. C., Jr.: Fatigue and Fracture Research in Metals at Langley Research Center. Presented at The Technical Cooperative Program Committee HTP-3 Meeting, September 27, 1983, Fort Eustis, Virginia.  
(Subject Category 39 RTOP 505-33-23)
599. Nutt, S. R.; and Brewer, W. D.: Defects in Silicon Carbide Whiskers. Presented at the 1983 TMS-AIME Symposium on Concepts of Fatigue Crack Growth Thresholds Guidance, October 2-6, 1983, Philadelphia, Pennsylvania.  
(Subject Category 24 RTOP 505-33-13)
600. Nutt, S. R.; Brewer, W. D.; and Sarkar, B.: Precipitation in SiC/2124 Aluminum Composites. Presented at the 1983 TMS-AIME Symposium on Concepts of Fatigue Crack Growth Thresholds Guidance, October 2-6, 1983, Philadelphia, Pennsylvania.  
(Subject Category 24 RTOP 505-33-13)
601. \*O'Brien, T. K.: Characterizing Delamination Resistance of Toughened-Resin Composites. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada.  
(Subject Category 24 RTOP 534-03-13)

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602. \*O'Brien, T. K.: Fatigue and Fracture Research in Composites at Langley Research Center. Presented at The Technical Cooperative Program Committee HTP-3 Meeting, September 27, 1983, Fort Eustis, Virginia.  
(Subject Category 24 RTOP 506-53-23)
603. Poe, C. C., Jr.: Fracture Toughness of Composite Laminates. Presented at the AFWAL Ninth Annual Mechanics of Composites Review, October 24-26, 1983, Dayton, Ohio.  
(Subject Category 24 RTOP 506-53-23)
604. Rummler, Donald R.: Advances in Carbon-Carbon and Current and Future Applications. Presented at the NASA/AIAA Fibrous Ceramic Materials Technology Seminar, March 23, 1983, Houston, Texas.  
(Subject Category 24 RTOP 506-53-33)
605. Shivakumar, K. N.; and Whitcomb, J. D.: Buckling of Surface Delaminations in Quasi-Isotropic Composite Laminates. Presented at the AFWAL Ninth Annual Mechanics of Composites Review, October 24-26, 1983, Dayton, Ohio.  
(Subject Category 24 RTOP 505-33-33)
606. St. Clair, T. L.: High Temperature Polymers for Aerospace Applications. Presented at the Gordon Research Conference on The Science of Adhesion, August 22-26, 1983, New Hampton, New Hampshire.  
(Subject Category 27 RTOP 505-33-33)
607. St. Clair, Terry L.: Adhesive Development at NASA Langley. Presented at the VPI&SU Center for Adhesion Science Workshop/Program Review, May 1-3, 1983, Blacksburg, Virginia.  
(Subject Category 27 RTOP 505-33-33)
608. St. Clair, Terry L.: Thermoplastic Polyimide Development. Presented at the American Cyanamid Company Stamford Research Laboratory, July 12, 1983, Stamford, Connecticut.  
(Subject Category 27 RTOP 505-33-33)
609. St. Clair, Terry L.: High Temperature Polymers: Synthesis and Application in Composites and Adhesives. Presented at the California Institute of Technology Industrial Associates Conference on Polymers and Composites, May 10-12, 1983, Pasadena, California.  
(Subject Category 27 RTOP 505-33-33)
610. Stein, Bland A.: An Overview of NASA Research Programs on Metal Matrix Composites. Presented at the U.C.L.A./Metal Matrix Composites Information Center, Metal Matrix Composites Short Course, August 1-5, 1983, Los Angeles, California.  
(Subject Category 25 RTOP 505-33-13)
611. Tenney, Darrel R.: Materials Technology for Large Space Systems. Presented at the ASM/Oak Ridge Chapter Session, 1983 WATtec Conference, February 23-25, 1983, Oak Ridge, Tennessee.  
(Subject Category 24 RTOP 506-53-23)

612. Vosteen, Louis F.: NASA Composite Applications. Presented at the Michigan State University, et al./USATAC Workshop on Advanced Materials - Implications for Michigan Industry, September 11-13, 1983, Traverse City, Michigan.  
(Subject Category 24 RTOP 505-33-33)

#### Computer Programs

613. Bigelow, Catherine A. (Langley Research Center); and Bahei-El-Din, Y. A. (Consultant): Plastic and Failure Analysis of Composites (PAFAC). Program No. LAR-13183. Submitted 1983.  
(Subject Category 24)

#### Tech Briefs

614. Baucom, Robert M.: Solventless Fabrication of Reinforced Composites. NASA Tech Brief LAR-12856.
615. Bigelow, Catherine A. (Langley Research Center); and Bahei-El-Din, Y. A. (Consultant): Plastic and Failure Analysis of Composites. NASA Tech Brief LAR-13183.
616. Deaton, Jerry W.: A Repair Technology Program at NASA on Composite Materials. NASA Tech Brief LAR-13146.
617. \*Farley, Gary L.; and \*Baker, Donald J.: Linearly Variable Displacement Transducers (LVDT) Fixture. NASA Tech Brief LAR-12937.
618. \*Farley, Gary L.; and Modlin, John T.: End Restraints for Impact Energy Absorbing Tube Specimens. NASA Tech Brief LAR-13179.
619. Freeman, William T., Jr.; Jones, William S.; and \*Farley, Gary L.: In Situ Composite Fastener. NASA Tech Brief LAR-12939.
620. Hergenrother, Paul M. (Langley Research Center); and Havens, Stephen J. (Kentron International, Inc.): Ethynyl-Terminated Ester Oligomers and Polymers. NASA Tech Brief LAR-13118.
621. Long, E. R., Jr.; and Schuszler, A., II: Electrical Dissipation Measurement of Polymer Phase Transitions. NASA Tech Brief LAR-12861.
622. Olson, Glenn O. (Boeing Commercial Airplane Company): Lightning Protection System for Composite Aircraft Structures. NASA Tech Brief LAR-12879.
623. Progar, Donald J.: Recharging "Hot-Melt" Adhesive Film. NASA Tech Brief LAR-12881.
624. St. Clair, Anne K.; St. Clair, Terry L.; and Robinson, Philip D.: Laminating Polyimide Films. NASA Tech Brief LAR-12742.

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\*Army Structures Laboratory, USARTL (AVRADCOM)

625. St. Clair, Terry L.; Burks, Harold D.; and Ely, Robert M.: Aromatic Polyimides With Group VI Linkages. NASA Tech Brief LAR-12980.
626. St. Clair, Terry L.; St. Clair, Anne K.; and Barrick, John D. (Langley Research Center); Wolfe, James F. (Virginia Polytechnic Institute and State University); and Greenwood, Thomas D. (King College): Thermoset/Thermoplastic Aromatic Polyamides for Composites. NASA Tech Brief LAR-12723.
627. St. Clair, Terry L. (Langley Research Center); and Yamaki, David (Massachusetts Institute of Technology): A Solvent-Resistant, Thermoplastic Poly(imidesulfone). NASA Tech Brief LAR-12858.
628. Stein, Bland A.; Tyeryar, James R.; Fox, Robert L.; Sterling, S. Elmo, Jr.; and Buckley, John D.: Rapid Adhesive Bonding. NASA Tech Brief LAR-13066.
629. Young, Philip R. (Langley Research Center); and Chang, A. C. (Kentron International, Inc.): Resin Characterization in Cured Composite Materials. NASA Tech Brief LAR-13172.

#### Patents

630. Baucom, Robert M.: Medical Clip. U.S. Patent 4,416,266. Issued November 22, 1983.  
(Subject Category 54)
631. Clark, Ronald K.; and Lisagor, W. Barry: Fixture for Environmental Exposure of Structural Materials Under Compression Load. U.S. Patent 4,393,716. Issued July 19, 1983.  
(Subject Category 39)
632. Davidson, John R.; and Heyman, Joseph S.: Electronically Calibratable Clock. U.S. Patent 4,407,589. Issued October 4, 1983.  
(Subject Category 33)
633. Hergenrother, Paul M.: Polyphenylquinoxalines Containing Pendant Phenylethynyl and Ethynyl Groups. U.S. Patent 4,375,536. Issued March 1, 1983.  
(Subject Category 27)
634. Progar, Donald J.: Hot Melt Recharge System. U.S. Patent 4,420,518. Issued December 13, 1983.  
(Subject Category 27)
635. St. Clair, A. K.; and St. Clair, T. L.: Elastomer Toughened Polyimide Adhesives. U.S. Patent 4,389,504. Issued June 21, 1983.  
(Subject Category 27)
636. St. Clair, Terry L.; Wolfe, James F.; and Greenwood, Thomas D.: Thermoset-Thermoplastic Aromatic Polyamide Containing N-Propargyl Groups. U.S. Patent 4,395,540. Issued July 26, 1983.  
(Subject Category 27)

637. St. Clair, Terry L.; and Yamaki, David A.: Solvent Resistant, Thermoplastic Aromatic Poly(Imidesulfone) and Process for Preparing Same. U.S. Patent 4,398,021. Issued August 9, 1983.  
(Subject Category 27)

# PUBLICATIONS FOR ACOUSTICS AND NOISE REDUCTION DIVISION

## Formal Reports

638. Clevenson, Sherman A.; Leatherwood, Jack D.; and Hollenbaugh, Daniel D.: Interior Noise and Vibration Measurements on Operational Military Helicopters and Comparisons With Various Ride Quality Criteria. NASA TM-84664, AVRADCOM TR 83-D-21, August 1983, 80 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-35-13)
639. Dempsey, Thomas K.; Stephens, David G.; Fields, James M.; and Shepherd, Kevin P.: Residents' Annoyance Responses to Aircraft Noise Events. NASA TP-2121, September 1983, 40 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-35-13)
640. Gillian, Ronnie E.: Aircraft Noise Prediction Program User's Manual. NASA TM-84486, January 1983, 322 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-32-03)
641. Hariharan, S. I.; and Lester, Harold C.: A Finite Difference Solution for the Propagation of Sound in Near Sonic Flows. NASA TM-84663, July 1983, 27 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-31-33)
642. Hubbard, Harvey H.; and Manning, James C.: Aeroacoustic Research Facilities at the NASA Langley Research Center - Description and Operational Characteristics. NASA TM-84585, March 1983, 24 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-31-33)
643. Long, Lyle N.: The Compressible Aerodynamics of Rotating Blades Based on an Acoustic Formulation. NASA TP-2197, December 1983, 76 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-42-23)
644. Parrott, Tony L.; and Watson, Willie R.: Comparison of Measured and Calculated Mode Redistribution Associated With Spinning Mode Transmission Through Circumferentially Segmented Lined Ducts. NASA TM-84576, March 1983, 24 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-31-33)
645. Powell, Clemans A.: Multiple-Event Airplane Noise Annoyance. NASA TP-2101, January 1983, 32 p.  
(Avail: NTIS                      Subject Category 45                      RTOP 505-35-13)
646. Seiner, John M.: The Wedge Hot-Film Anemometer in Supersonic Flow. NASA TP-2134, May 1983, 56 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-32-03)
647. Shearin, John G.: Investigation of Jet-Installation Noise Sources Under Static Conditions. NASA TP-2181, August 1983, 31 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-31-33)

648. Shepherd, Kevin P.; Leatherwood, Jack D.; and Clevenson, Sherman A.: Effect of Low-Frequency Tones and Turbulent-Boundary-Layer Noise on Annoyance. NASA TP-2202, September 1983, 25 p.  
(Avail: NTIS Subject Category 53 RTOP 505-35-13)

#### Quick-Release Technical Memorandums

649. Flindell, Ian H.: A Laboratory Study of the Perceived Benefit of Additional Noise Attenuation by Houses. NASA TM-85647, June 1983, 57 p.  
(Avail: NTIS Subject Category 71 RTOP 505-35-13)
650. Koval, Leslie R.: Field-Incidence Transmission of Treated Orthotropic and Laminated Composite Panels. NASA TM-85680, August 1983, 49 p.  
(Avail: NTIS Subject Category 71 RTOP 532-06-13)
651. Willshire, William L., Jr.: Rye Canyon X-Wing Noise Test: One-Third Octave Band Data. NASA TM-84602, January 1983, 234 p.  
(Avail: NTIS Subject Category 71 RTOP 505-31-33)
652. Zorumski, William E.: Propeller Noise Prediction. NASA TM-85636, May 1983, 61 p.  
(Avail: NTIS Subject Category 71 RTOP 505-40-12)

#### Contractor Reports

653. Abrahamson, A. Louis: ADAM - An Axisymmetric Duct Aeroacoustic Modeling System. (L-34073B COMTEK.) NASA CR-3668, January 1983, 90 p.  
(Avail: NTIS Subject Category 71 RTOP 505-31-33)
654. Grosveld, Ferdinand W.: Characteristics of the Transmission Loss Apparatus at NASA Langley Research Center. (NAS1-16978 The Bionetics Corporation.) NASA CR-172153, June 1983, 42 p.  
(Avail: NTIS Subject Category 71 RTOP 505-33-53)
655. Hayden, R. E.; Murray, B. S.; and Theobald, M. A.: A Study of Interior Noise Levels, Noise Sources and Transmission Paths in Light Aircraft. (NAS1-16138 Bolt Beranek and Newman Inc.) NASA CR-172152, July 1983, 190 p.  
(Avail: IAC Subject Category 71 RTOP 505-09-23)
656. Kalton, Graham: Estimating Regression Coefficients From Clustered Samples: Sampling Errors and Optimum Sample Allocation. (NAS1-16107 University of Michigan.) NASA CR-166117, May 1983, 26 p.  
(Avail: NTIS Subject Category 71 RTOP 505-35-13)
657. Rawls, John W., Jr.: Comparison of Forward Flight Effects Theory of A. Michalke and U. Michel With Measured Data. (NAS1-16000 Kentron Technical Center.) NASA CR-3665, January 1983, 54 p.  
(Avail: NTIS Subject Category 71 RTOP 505-31-33)



658. Schlinker, Robert H.; and Amiet, Roy K.: Rotor-Vortex Interaction Noise. (NAS1-16392 United Technologies Research Center.) NASA CR-3744, October 1983, 130 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 532-06-13)
659. Shepherd, K. P.; and Hubbard, Harvey H.: Measurements and Observations of Noise From a 4.2 Megawatt (WTS-4) Wind Turbine Generator. (NAS1-16978 and NAG1-166 The Bionetics Corporation and The College of William and Mary.) NASA CR-166124, May 1983, 31 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 776-33-41)
660. Stearns, John; Brown, Ron; and Neiswander, Paul: A Pilot Study of Human Response to General Aviation Aircraft Noise. (NAS1-15388 Wyle Laboratories.) NASA CR-166053, January 1983, 101 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-09-13)
661. Succi, George P.: Limits on the Prediction of Helicopter Rotor Noise Using Thickness and Loading Sources: Validation of Helicopter Noise Prediction Techniques. (NAS1-16886 Bolt Beranek and Newman Inc.) NASA CR-166097, April 1983, 90 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-42-23)
662. Valcaitis, R.: Study of Noise Transmission Through Double Wall Aircraft Windows. (NAS1-16117 Modern Analysis, Inc.) NASA CR-172182, October 1983, 92 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 505-33-53)
663. Yoerkie, C. A.; Moore, J. A.; and Manning, J. E.: Development of Rotorcraft Interior Noise Control Concepts - Phase I: Definition Study. (NAS1-16932 United Technologies Corporation.) NASA CR-166101, May 1983, 210 p.  
(Avail: NTIS                      Subject Category 71                      RTOP 532-06-13)

#### Journal Articles and Other Publications

664. Bayliss, Alvin; and Maestrello, Lucio: On the Interaction of a Sound Pulse With the Shear Layer of an Axisymmetric Jet, Part 2. Journal of Sound and Vibration, Volume 86, February 8, 1983, p. 395-409.  
(Subject Category 71                      RTOP 505-32-03)
665. Farassat, F.; and Martin, R. M.: A Note on the Tip Noise of Rotating Blades. Journal of Sound and Vibration, Volume 86, February 8, 1983, p. 449-453.  
(Subject Category 71                      RTOP 505-41-43)
666. McGary, Michael C.; and Mayes, William H.: A New Measurement Method for Separating Airborne and Structureborne Aircraft Interior Noise. Noise Control Engineering, Volume 20, No. 1, January/February 1983, p. 21-30.  
(Subject Category 71                      RTOP 505-33-53)

667. Mixson, J. S.; Farassat, F.; Leatherwood, J. D.; Prydz, R.; and Revell, J. D.: Interior Noise Considerations for Advanced High-Speed Turboprop Aircraft. Journal of Aircraft, Volume 20, No. 9, September 1983, p. 791-797.  
(Subject Category 71      RTOP 535-03-13)
668. Mixson, John S.; Roussos, Louis A.; Barton, C. Kearney; Vaicaitis, Rimas; and Slazak, Mario: Laboratory Study of Add-On Treatments for Interior Noise Control in Light Aircraft. Journal of Aircraft, Volume 20, No. 6, June 1983, p. 516-522.  
(Subject Category 71      RTOP 505-33-53)
669. Norum, T. D.: Screech Suppression in Supersonic Jets. AIAA Journal, Volume 21, No. 2, February 1983, p. 235-240.  
(Subject Category 71      RTOP 505-32-03)
670. Pao, S. P.; and Seiner, J. M.: Shock-Associated Noise in Supersonic Jets. AIAA Journal, Volume 21, No. 5, May 1983, p. 687-693.  
(Subject Category 71      RTOP 505-32-03)
671. Pope, L. D.; Wilby, E. G.; Willis, C. M.; and Mayes, W. H.: Aircraft Interior Noise Models: Sidewall Trim, Stiffened Structures, and Cabin Acoustics With Floor Partition. Journal of Sound and Vibration, Volume 89, No. 3, August 8, 1983, p. 371-417.  
(Subject Category 71      RTOP 505-33-53)
672. Preisser, John S.; Schoenster, James A.; Golub, Robert A.; and Horne, C.: Turbofan Engine Blade Pressure and Acoustic Radiation at Simulated Forward Speed. Journal of Aircraft, Volume 20, April 1983, p. 289-297.  
(Subject Category 71      RTOP 505-32-03)
673. Shepherd, Kevin P.; Grosveld, Ferdinand W.; and Stephens, David G.: Evaluation of Human Exposure to the Noise From Large Wind Turbine Generators. Noise Control Engineering, Volume 21, No. 1, July/August 1983, p. 30-37.  
(Subject Category 71      RTOP 776-33-41)
674. Smith, C. D.; and Parrott, T. L.: Comparison of Three Methods for Measuring Acoustic Properties. Journal of the Acoustical Society of America, Volume 74, No. 5, November 1983, p. 1577-1582.  
(Subject Category 71      RTOP 505-32-03)
675. Willshire, William L., Jr.: Ground Effects on Aircraft Noise for a Wide-Body Commerical Airplane. AIAA Journal, Volume 20, No. 4, April 1983, p. 345-349.  
(Subject Category 71      RTOP 505-32-03)

#### Meeting Presentations

676. Block, Patricia J. W.; and Martin, Ruth M.: Results From Performance and Noise Tests of Model Scale Propellers. Presented at the SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830730.  
(Subject Category 71 RTOP 505-41-43)
677. Brooks, Thomas F.; and Marcolini, Michael A.: Airfoil Self Noise - Effect of Scale. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0785.  
(Subject Category 71 RTOP 505-42-13)
678. Clevenson, Sherman A.; Leatherwood, Jack D.; and Hollenbaugh, Dan D.: Operational Military Helicopter Interior Noise and Vibration Measurements With Comparisons to Ride Quality Criteria. Presented at the AIAA/AHS 1983 Aircraft Design, Systems, and Operations Meeting and Technical Display, October 17-19, 1983, Fort Worth, Texas. AIAA Paper No. 83-2526.  
(Subject Category 53 RTOP 505-35-13)
679. DeLoach, Richard: Routing in the Near-Terminal Area to Achieve Reductions in Airport Community Noise Impact. Presented at the 105th Meeting of the Acoustical Society of America, May 10-13, 1983, Cincinnati, Ohio. Published in the Journal of the Acoustical Society of America, Supplement I, Volume 73, Spring 1983, p. 249.  
(Subject Category 71 RTOP 505-35-13)
680. Farassat, F.: The Prediction of the Noise of Supersonic Propellers in Time Domain - New Theoretical Results. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0743.  
(Subject Category 71 RTOP 505-42-13)
681. Farassat, F.: The Evolution of Methods for Noise Prediction of High Speed Rotors and Propellers in the Time Domain. Presented at the Stanford University, International Symposium on Recent Advances in Aerodynamics and Aeroacoustics, August 22-26, 1983, Stanford, California. Proceedings Pending.  
(Subject Category 71 RTOP 505-42-23)
682. Fuller, C. R.; and Silcox, R. J.: An Experimental Investigation of Sound Radiation From a Duct With a Circumferentially Varying Liner. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0712.  
(Subject Category 71 RTOP 505-32-03)
683. Hardin, Jay C.; and Lamkin, Stanley L.: Aeroacoustic Computation of Cylinder Wake Flow. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0736.  
(Subject Category 71 RTOP 505-32-03)

684. Leatherwood, J. D.; Clevenson, S. A.; and Hollenbaugh, D. D.: Evaluation of Helicopter Ride Quality Prediction Methods. Presented at the American Helicopter Society's 39th Annual Forum & Technical Display, May 9-11, 1983, St. Louis, Missouri. In Proceedings, May 1983, p. 190-199.  
(Subject Category 53 RTOP 505-35-13)
685. Lester, Harold C.; Preisser, John S.; and Parrott, Tony L.: The Design and Flight Test of an Engine Inlet Bulk Acoustic Liner. Presented at the AIAA 8th Aeroacoustic Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0781.  
(Subject Category 71 RTOP 505-32-03)
686. \*Metcalf, Vern L.; and Mayes, William H.: Structureborne Contribution to Interior Noise of Propeller Aircraft. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830735.  
(Subject Category 71 RTOP 535-04-12)
687. Preisser, John S.; and Chestnutt, David: Flight Effects on Fan Noise With Static and Wind Tunnel Comparisons. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0678.  
(Subject Category 71 RTOP 505-32-03)
688. Roussos, Louis A.; Grosveld, Ferdinand W.; Koval, Leslie R.; and Powell, Clemans A.: Noise Transmission Characteristics of Advanced Composite Structural Materials. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0694.  
(Subject Category 71 RTOP 505-33-53)
689. Schoenster, James A.: Fluctuating Pressure Measurements on the Fan Blades of a Turbofan Engine During Ground and Flight Tests. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0679.  
(Subject Category 71 RTOP 505-32-03)
690. Seiner, John M.; Dash, Sanford M.; and Wolf, David E.: Shock Noise Features Using the SCIPVIS Code. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0705.  
(Subject Category 71 RTOP 505-31-33)
691. Silcox, Richard J.: Experimental Investigation of Geometry and Flow Effects on Acoustic Radiation From Duct Inlets. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0713.  
(Subject Category 71 RTOP 505-32-03)

---

\*Army Structures Laboratory, USARTL (AVRADCOM)

692. Stephens, David G.; and Powell, Clemans A.: Human Response to Aircraft and Other Noise Events. Presented at the INT 4th International Congress on Noise as a Public Health Problem, June 21-25, 1983, Turin, Italy.  
(Subject Category 71 RTOP 505-35-13)
693. Stephens, D. G.; and Willshire, K. F.: Vibroacoustic Habitability of Space Stations. Presented at the 27th Annual Meeting of the Human Factors Society, October 10-14, 1983, Norfolk, Virginia. In Proceedings, Volume 1, 1983, p. 123.  
(Subject Category 99 RTOP 505-35-13)
694. Watson, Willie R.: An Evaluation of Circumferentially Segmented Duct Liners. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0732.  
(Subject Category 71 RTOP 505-32-03)
695. Willshire, Kelli F.: Aircraft and Background Noise Annoyance Effects. Presented at the 27th Annual Meeting of the Human Factors Society, October 10-14, 1983, Norfolk, Virginia. In Proceedings, Volume 1, p. 52.  
(Subject Category 99 RTOP 505-35-13)
696. Yu, James C.; and Seiner, John M.: Nearfield Observations of Tones Generated From Supersonic Jet Flows. Presented at the AIAA 8th Aeroacoustics Conference, April 11-13, 1983, Atlanta, Georgia. AIAA Paper No. 83-0706.  
(Subject Category 71 RTOP 505-32-03)
697. Zaman, K. B. M. Q.: Large-Scale Coherent Structure and Far-Field Jet Noise. Presented at the University of Karlsruhe Fourth Symposium on Turbulent Shear Flows, September 12-14, 1983, Karlsruhe, Germany. In Proceedings.  
(Subject Category 71 RTOP 505-31-33)
698. Zorumski, W. E.: Propeller Noise Prediction. Presented at the 105th Meeting of the Acoustical Society of America, May 10-13, 1983, Cincinnati, Ohio. Published in the Journal of the Acoustical Society of America, Supplement I, Volume 73, Spring 1983, p. 220. Also published as NASA TM-85636, May 1983.  
(Subject Category 71 RTOP 505-41-43)

#### Technical Talks

699. Hariharan, S. I.; and Lester, H. C.: Acoustic Shocks in a Variable Area Duct Containing Near Sonic Flows. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 71 RTOP 505-31-33)
700. Hariharan, S. I.; and Lester, H. C.: A Finite Difference Solution for the Propagation of Sound in Near Sonic Flows. Presented at the 104th Acoustical Society of America Meeting, November 11, 1983, Orlando, Florida.  
(Subject Category 71 RTOP 505-31-33)

701. Lamkin, Stanley L.; and Hardin, Jay C.: Aeroacoustic Computation From Vortex-Pair Merging. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 76 RTOP 505-31-33)
702. McCurdy, D. A.: Annoyance to Advanced Turboprop Aircraft Flyover Noise. Presented at the 106th Acoustical Society of America Meeting, November 8-11, 1983, San Diego, California.  
(Subject Category 71 RTOP 505-35-13)
703. Stephens, D. G.: Vibroacoustic Habitability of Space Stations. Presented at the 106th Acoustical Society of America Meeting, November 8-11, 1983, San Diego, California.  
(Subject Category 71 RTOP 505-35-13)

#### Computer Programs

No computer programs.

#### Tech Briefs

704. Leatherwood, Jack D.; Dempsey, Thomas K.; Clevenson, Sherman A.; and Stephens, David G.: Ride-Quality Meter. NASA Tech Brief LAR-12882.
705. Rennison, D. C.; and Wilby, J. F. (Bolt Beranek and Newman Inc.): Noise Control in Propeller-Driven Aircraft. NASA Tech Brief LAR-12954.
706. Tanna, H. K.; Brown, W. H.; and Tam, C. K. W. (Lockheed Corporation): Reducing Aircraft-Engine Noise. NASA Tech Brief LAR-12890.

#### Patents

707. Leatherwood, Jack D.; Dempsey, Thomas K.; Clevenson, Sherman A.; and Stephens, David G.: Ride Quality Meter. U.S. Patent 4,413,522. Issued November 8, 1983.  
(Subject Category 71)

# PUBLICATIONS FOR STRUCTURES AND DYNAMICS DIVISION

## Formal Reports

708. Blosser, Max L.: Bending Stiffness of Multiwall Sandwich. NASA TM-84613, April 1983, 43 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-33)
709. Blosser, Max L.; and McWithey, Robert R.: Theoretical Basis for Design of Thermal-Stress-Free Fasteners. NASA TP-2226, December 1983, 22 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
710. Brumfield, M. Larry (Compiler): Structural Dynamics and Control of Large Space Structures - 1982. NASA CP-2266, April 1983, 267 p.  
(Avail: NTIS                      Subject Category 15                      RTOP 506-57-13)
711. Castle, Claude B.; and Alfaro-Bou, Emilio: Crash Tests of Three Identical Low-Wing Single-Engine Airplanes. NASA TP-2190, September 1983, 38 p.  
(Avail: NTIS                      Subject Category 03                      RTOP 505-33-53)
712. Daugherty, Robert H.: Braking and Cornering Studies on an Air Cushion Landing System. NASA TP-2196, September 1983, 24 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-45-23)
713. Dorsey, John T.: Vibration Characteristics of a Deployable Controllable-Geometry Truss Boom. NASA TP-2160, June 1983, 28 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
714. Heard, Walter L., Jr.; Bush, Harold G.; Wallson, Richard E.; and Jensen, J. Kermit: A Mobile Work Station Concept for Mechanically Aided Astronaut Assembly of Large Space Trusses. NASA TP-2108, March 1983, 37 p.  
(Avail: NTIS                      Subject Category 18                      RTOP 506-53-43)
715. McCarty, John Locke; and Tanner, John A.: Temperature Distribution in an Aircraft Tire at Low Ground Speeds. NASA TP-2195, August 1983, 34 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-45-23)
716. Noor, Ahmed K.; Shuart, Mark J.; Starnes, James H., Jr.; and Williams, Jerry G. (Compilers): Failure Analysis and Mechanisms of Failure of Fibrous Composite Structures. NASA CP-2278, August 1983, 384 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 534-03-23)
717. Pinson, Larry D.; Amos, Anthony K.; and Venkayya, V. B. (Compilers): Modeling, Analysis, and Optimization Issues for Large Space Structures. NASA CP-2258, February 1983, 230 p.  
(Avail: NTIS                      Subject Category 15                      RTOP 506-53-53)
718. Sawyer, James Wayne: Effect of Strain Isolator Pad Modulus on Inplane Strain in Shuttle Orbiter Thermal Protection System Tiles. NASA TP-2141, August 1983, 46 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)

719. Sewall, John L.; Miserentino, Robert; and Pappa, Richard S.: Vibration Studies of a Lightweight Three-Sided Membrane Suitable for Space Application. NASA TP-2095, January 1983, 48 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
720. Shuart, Mark J.; and Hagaman, Jane A.: Buckling and Failure Characteristics of Graphite-Polyimide Shear Panels. NASA TP-2153, May 1983, 23 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 505-33-33)
721. Stein, Manuel; and Stein, Peter A.: A Solution Procedure for Behavior of Thick Plates on a Nonlinear Foundation and Postbuckling Behavior of Long Plates. NASA TP-2174, September 1983, 38 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-33)
722. Strohkorb, Gregg A.; and Noor, Ahmed K.: Potential of Minicomputer/Array-Processor System for Nonlinear Finite-Element Analysis. NASA TM-84566, June 1983, 70 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-63)
723. Tanner, John A. (Compiler): Tire Modeling. NASA CP-2264, March 1983, 248 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-45-23)

#### Quick-Release Technical Memorandums

724. Bales, Kay S.: Structures and Dynamics Division Research and Technology Plans for FY 1983 and Accomplishments for FY 1982. NASA TM-85661, June 1983, 112 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
725. Bostic, Susan W.: TEKLIB Graphics Library. NASA TM-84633, March 1983, 25 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-37-13)
726. McComb, Harvey G., Jr.: Advanced Structures Technology and Aircraft Safety. NASA TM-85664, July 1983, 15 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-45-23)
727. Razzaq, Zia; Volland, R. T.; Bush, H. G.; and Mikulas, M. M., Jr.: Stability, Vibration, and Passive Damping of Partially Restrained Imperfect Columns. NASA TM-85697, October 1983, 37 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
728. Thomson, R. G.; and Caiafa, C.: Structural Response of Transport Airplanes in Crash Situations. NASA TM-85654, June 1983, 98 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-33-53)
729. Williams, M. Susan; and Hayduk, Robert J.: Vertical Drop Test of a Transport Fuselage Section Located Forward of the Wing. NASA TM-85679, August 1983, 56 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-53)



730. Williams, M. Susan; and Hayduk, Robert J.: Vertical Drop Test of a Transport Fuselage Center Section Including the Wheel Wells. NASA TM-85706, October 1983, 58 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-53)
731. Yager, Thomas J.: Factors Influencing Aircraft Ground Handling Performance. NASA TM-85652, June 1983, 31 p.  
(Avail: NTIS Subject Category 05 RTOP 505-45-23)

#### Contractor Reports

732. Bluck, R. M.; and Johnson, R. R.: Fabrication of Slender Struts for Deployable Antennas. (NAS1-14887 Lockheed Missiles & Space Company, Inc.) NASA CR-172164, April 1983, 17 p.  
(Avail: NTIS Subject Category 24 RTOP 506-53-43)
733. Cushman, J. B.; McCleskey, S. F.; and Ward, S. H.: Design, Fabrication and Test of Graphite/Polyimide Composite Joints and Attachments - Summary. (NAS1-15644 Boeing Aerospace Company.) NASA CR-3601, January 1983, 96 p.  
(Avail: NTIS Subject Category 39 RTOP 506-53-43)
734. Cushman, J. B.; McCleskey, S. F.; and Ward, S. H.: Test and Analysis of Celion 3000/PMR-15, Graphite/Polyimide Bonded Composite Joints - Summary. (NAS1-15644 Boeing Aerospace Company.) NASA CR-3602, January 1983, 76 p.  
(Avail: NTIS Subject Category 39 RTOP 506-53-43)
735. Fishwick, Paul A.: SPP: A Data Base Processor Data Communications Protocol. (NAS1-16000 Kentron Technical Center.) NASA CR-172144, May 1983, 71 p.  
(Avail: NTIS Subject Category 60 RTOP 505-37-23)
736. Fishwick, Paul A.: DBPSSP: A Data Base Processor Semantics Specification Package. (NAS1-16000 Kentron Technical Center.) NASA CR-172172, June 1983, 36 p.  
(Avail: NTIS Subject Category 61 RTOP 505-37-13)
737. Fishwick, Paul A.: DBPQL: A View-Oriented Query Language for the Intel Data Base Processor. (NAS1-16000 Kentron Technical Center.) NASA CR-172191, July 1983, 54 p.  
(Avail: NTIS Subject Category 62 RTOP 505-37-23)
738. Fishwick, Paul A.; Sutter, Thomas R.; and Blackburn, Charles L.: Prototype Integrated Design (PRIDE) System: Reference Manual, Volume 2 - Schema Definition. (NAS1-16000 Kentron Technical Center.) NASA CR-172183, July 1983, 28 p.  
(Avail: NTIS Subject Category 61 RTOP 505-37-13)
739. Gabel, R.; Kesack, W.; Reed, D. A.; and Ricks, R.: Planning, Creating and Documenting a NASTRAN Finite Element Vibrations Model of a Modern Helicopter - Summary Report. (NAS1-16460 Boeing Vertol Company.) NASA CR-172229, October 1983, 396 p.  
(Avail: STIF Subject Category 39 RTOP 532-06-13)

740. Hedgepeth, John M.; and Adams, Louis R.: Design Concepts for Large Reflector Antenna Structures. (NAS1-16134 Astro Research Corporation.) NASA CR-3663, January 1983, 82 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
741. Knott, J. D.: A Performance Analysis of the PASLIB Version 2.1X SEND and RECV Routines on the Finite Element Machine. (NAS1-16000 Kentron International, Inc.) NASA CR-172205, August 1983, 33 p.  
(Avail: NTIS                      Subject Category 66                      RTOP 505-37-13)
742. Knott, J. D.: FEM Array Control Software User's Guide. (NAS1-16000 Kentron International, Inc.) NASA CR-172189, August 1983, 61 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-37-13)
743. Kyser, Albert C.: The Effect of Atmospheric Drag on the Design of Solar-Cell Power Systems for Low Earth Orbit. (NAS1-16042 The College of William and Mary, Virginia Associated Research Campus.) NASA CR-166020, June 1983, 76 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 506-53-43)
744. Ross, Irving; and Edson, Ralph: Application of Active Control Landing Gear Technology to the A-10 Aircraft. (NAS1-17068 Hydraulic Research Textron, Inc.) NASA CR-166104, June 1983, 129 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-45-23)
745. Sakata, I. F.; Davis, G. W.; and Cox, J. M.: Advanced Hybrid Structural Concepts Development. (NAS1-16048 Lockheed-California Company.) NASA CR-3728, September 1983, 132 p.  
(Avail: STIF                      Subject Category 39                      RTOP 505-33-53)
746. Vernon, R. M.; Craighead, N. D.; Richman, R. A.; Hoffman, L. M.; Jacquemin, G. G.; Fuller, H. I.; and Dumas, K. L.: Emergency VLF Antenna Tower Design Study. (NAS1-16599 Lockheed Missiles & Space Company, Inc.) NASA CR-172187, June 1983, 134 p.  
(Avail: STIF                      Subject Category 39                      RTOP 506-53-43)
747. Wittlin, Gil; and Lackey, Dave: Analytical Modeling of Transport Aircraft Crash Scenarios to Obtain Floor Pulses. (NAS1-16083 Lockheed-California Company.) NASA CR-166089, April 1983, 193 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-33-53)

#### Journal Articles and Other Publications

748. Anderson, M. S.; Williams, Fred W.; and Wright, C. J.: Buckling and Vibration of Any Prismatic Assembly of Shear and Compression Loaded Anisotropic Plates With an Arbitrary Supporting Structure. International Journal of Mechanical Sciences, Volume 25, No. 8, 1983, p. 585-596.  
(Subject Category 39                      RTOP 506-53-41)

749. Blackburn, C. L.; Storaasli, O. O.; and Fulton, R. E.: The Role and Application of Data Base Management in Integrated Computer-Aided Design. Journal of Aircraft, Volume 20, No. 8, August 1983, p. 717-725.  
(Subject Category 62 RTOP 505-33-63)
750. Card, M. F.: Streamlining for Fuel Economy. Astronautics and Aeronautics, Volume 21, No. 3, March 1983, p. 66-68.  
(Subject Category 39 RTOP 506-53-53)
751. Fichter, W. B.: The Stress Intensity Factor for the Double Cantilever Beam. International Journal of Fracture, Volume 22, 1983, p. 133-143.  
(Subject Category 39 RTOP 506-53-43)
752. Haftka, Raphael T.; Starnes, James H., Jr.; and Nair, Sudhakar: Design for Global Damage Tolerance and Associated Mass Penalties. Journal of Aircraft, Volume 20, No. 1, January 1983, p. 83-88.  
(Subject Category 39 RTOP 506-53-53)
753. Hanks, Brantley R.; and Pinson, Larry D.: Large Space Structures Raise Testing Challenges. Astronautics and Aeronautics, Volume 21, No. 10, October 1983, p. 34-40.  
(Subject Category 39 RTOP 506-53-53)
754. Housner, J. M.; and Knight, N. F., Jr.: The Dynamic Collapse of a Column Impacting a Rigid Surface. AIAA Journal, Volume 21, No. 8, August 1983, p. 1187-1195.  
(Subject Category 39 RTOP 506-53-43)
755. Juang, Jer-Nan; and Dwyer, Thomas A. W., III: First Order Solution of the Optimal Regulator Problem for a Distributed Parameter Elastic System. The Journal of the Astronautical Sciences, Volume 31, No. 3, July - September 1983, p. 429-439.  
(Subject Category 39 RTOP 506-53-53)
756. McComb, Harvey G., Jr.: Safe Structures for Future Aircraft. Astronautics and Aeronautics, Volume 21, No. 9, September 1983, p. 72-75.  
(Subject Category 39 RTOP 505-45-23)
757. Stein, M.: Postbuckling of Orthotropic Composite Plates Loaded in Compression. AIAA Journal, Volume 21, No. 12, December 1983, p. 1729-1735.  
(Subject Category 39 RTOP 506-53-53)
758. Taylor, A. H.; MacConochie, I. O.; Jackson, L. R.; and Martin, J. A.: Structures and Subsystems. Astronautics and Aeronautics, Volume 21, No. 6, June 1983, p. 50-56, 62.  
(Subject Category 39 RTOP 506-53-43)
759. Williams, Fred W.; and Anderson, M. S.: Incorporation of Lagrangian Multipliers into an Algorithm for Finding Natural Frequencies or Critical Buckling Loads. International Journal of Mechanical Sciences, Volume 25, No. 8, 1983, p. 579-584.  
(Subject Category 39 RTOP 506-53-41)

### Meeting Presentations

760. Belvin, W. Keith: Vibration Characteristics of Hexagonal Radial Rib and Hoop Platforms. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0822-CP.  
(Subject Category 39 RTOP 506-53-43)
761. Blosser, Max L.: Design Study of Carbon/Carbon Shuttle Body Flap. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 39 RTOP 506-53-43)
762. Bohon, Herman L.; Chapman, Andrew J., III; and Leybold, Herbert A.: Ground Test Experience With Large Composite Structures for Commercial Transports. Presented at the AHS Mideast Region Composite Structures Specialists' Meeting, March 23-25, 1983, Philadelphia, Pennsylvania. (Also available as NASA TM-84627.) Proceedings Pending.  
(Subject Category 39 RTOP 534-03-13)
763. Card, Michael F.; and Anderson, Willard W.: Technical Issues in Dynamics and Control of Large Space Structures. Presented at the 34th International Astronautical Federation (IAF) Congress, October 9-15, 1983, Budapest, Hungary. IAF Paper No. 83-403. Proceedings Pending.  
(Subject Category 39 RTOP 506-53-43)
764. Carden, Huey D.: Impulse Analysis of Airplane Crash Data With Considerations Given to Human Tolerance. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830748.  
(Subject Category 39 RTOP 505-33-53)
765. Cooper, Paul A.; and Sawyer, James Wayne: Life Considerations of the Shuttle Orbiter Densified Tile Thermal Protection System. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 39 RTOP 506-53-43)
766. Daugherty, Robert H.: Review of NASA ACLS Research. Presented at the (CASI) 17th Canadian Symposium on Air Cushion Technology, October 4-6, 1983, Ottawa, Ontario, Canada. In Preprint Volume.  
(Subject Category 05 RTOP 505-45-23)
767. Davis, Randall C.; and Mills, Charles T.: Structural Efficiency Studies of Advanced Compression Panels With Curved Elements. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 39 RTOP 505-33-53)

768. Dorsey, John T.; Bush, Harold G.; and Mikulas, Martin M., Jr.: Preliminary Space Station Solar Array Structural Design Study. Presented at the NASA Lewis Research Center, Sixth Space Photovoltaic Research and Technology Meeting, October 18-20, 1983, Cleveland, Ohio. Proceedings Pending.  
(Subject Category 39 RTOP 506-53-43)
769. Fichter, W. B.: Reduction of RMS-Error in Shallow Faceted Large Space Antennas. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-1021-CP.  
(Subject Category 39 RTOP 506-53-43)
770. Greene, William H.: Effects of Random Member Length Errors on the Accuracy and Internal Loads of Truss Antennas. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-1019-CP.  
(Subject Category 39 RTOP 506-53-43)
771. Hanks, Brantley R.; and Skelton, Robert E.: Designing Structures for Reduced Response by Modern Control Theory. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0851-CP.  
(Subject Category 39 RTOP 506-53-43)
772. Hayduk, R. J.; Winter, R.; Pifko, A. B.; and Fasanella, E. L.: Application of the Nonlinear Finite Element Computer Program "DYCAST" to Aircraft Crash Analysis. Presented at the University of Liverpool, International Symposium on Structural Crashworthiness, September 14-16, 1983, Liverpool, England. In Book entitled: "Structural Crashworthiness," edited by N. Jones and T. Wierzeicki, Published by Butterworths Publishers, 1983, p. 283-307.  
(Subject Category 39 RTOP 505-41-33)
773. Horner, Garnett C.: Optimum Actuator Placement, Gain and Number for Two-Dimensional Grillage. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0854-CP.  
(Subject Category 39 RTOP 506-53-43)
774. Horta, Lucas G.; and Hanks, Brantley R.: A Study of the Effects of a Cubic Nonlinearity on a Modern Modal Identification Technique. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0810-CP.  
(Subject Category 39 RTOP 506-53-43)
775. Housner, Jerrold M.; and Belvin, W. Keith: On the Dynamic Response and Collapse of Slender Guyed Booms for Space Application. Presented at the AIAA/ASME/ASCE/AHS Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0821-CP.  
(Subject Category 39 RTOP 506-53-43)

776. Juang, Jer-Nan: Optimal Design of a Passive Vibration Absorber for a Truss Beam. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2291-CP.  
(Subject Category 39 RTOP 506-53-53)
777. Juang, Jer-Nan; Turner, James D.; and Chun, Hon M.: Closed-Form Solutions for Feedback Control With Terminal Constraints. Presented at the VPI&SU/AIAA Fourth Symposium on Dynamics and Control of Large Structures, June 6-8, 1983, Blacksburg, Virginia. Proceedings Pending.  
(Subject Category 39 RTOP 506-53-53)
778. Knight, Norman F., Jr.: Nonlinear Structural Dynamics Analysis Using a Modified Modal Method. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0824-CP.  
(Subject Category 39 RTOP 505-33-33)
779. Pappa, Richard S.: Close-Mode Identification Performance of the ITD Algorithm. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0878-CP.  
(Subject Category 39 RTOP 506-53-53)
780. Sawyer, James Wayne: Effect of Stitching on the Strength of Bonded Composites Single Lap Joints. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0969-CP.  
(Subject Category 39 RTOP 505-33-33)
781. Sawyer, James Wayne: Experimental Evaluation of Thermal Stress-Free Fastening Technique for Two-Dimensional Carbon/Carbon Structures. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 39 RTOP 506-53-43)
782. Sawyer, James Wayne: Experimental Evaluation of Thermal Stress-Free Fastening Technique for Two-Dimensional Carbon/Carbon Structures. Presented at the Fifth JANNAF Rocket Nozzle Technology Meeting, December 6-8, 1983, Colorado Springs, Colorado. CPIA Proceedings Pending.  
(Subject Category 24 RTOP 506-53-43)
783. Sirlin, S. W.; Longman, R. W.; and Juang, J-N.: The Identification of General Linear Mechanical Systems. Presented at the 1983 American Control Conference, June 22-24, 1983, San Francisco, California. In Proceedings.  
(Subject Category 39 RTOP 506-53-53)
784. Stein, Manuel: Analytical Results for Postbuckling Behavior of Orthotropic Composite Plates in Compression and in Shear. Presented at the AFWAL Ninth Annual Mechanics of Composites Review, October 24-26, 1983, Dayton, Ohio. In Preprint Volume.  
(Subject Category 39 RTOP 534-03-23)

785. Stein, Manuel: Postbuckling of Long Orthotropic Plates in Combined Shear and Compression. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0876-CP.  
(Subject Category 39 RTOP 505-33-33)
786. Sun, C. T.; and Juang, J-N.: Modeling Global Structural Damping in Trusses Using Simple Continuum Models. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics, and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-1008-CP.  
(Subject Category 39 RTOP 506-53-53)
787. Taylor, Allan H.; Jackson, L. Robert; Cerro, Jeffrey A.; and Scotti, Stephen J.: An Analytical Comparison of Two Wing Structures for Mach 5 Cruise Airplanes. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0974-CP.  
(Subject Category 39 RTOP 505-33-73)
788. Taylor, Allan H.; Jackson, L. Robert; Davis, Randall C.; Cerro, Jeffrey A.; and Scotti, Stephen J.: Structural Concepts for Future Space Transportation System Orbiters. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0210.  
(Subject Category 39 RTOP 506-53-43)
789. Williams, Jerry G.: Effect of Impact-Damage and Open Holes on the Compression Strength of Tough Resin/High-Strain Fiber Laminates. Presented at the Workshop on Tough Composite Materials, May 24-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 24 RTOP 505-33-33)
790. Williams, Jerry G.; Starnes, James H., Jr.; and Waters, W. Allen: Damage Tolerance Characteristics of Kevlar/Epoxy Laminates Loaded in Compression. Presented at the AFWAL Ninth Annual Mechanics of Composites Review, October 24-26, 1983, Dayton, Ohio. In Preprint Volume.  
(Subject Category 39 RTOP 534-03-23)
791. Williams, Jerry G.; and Waters, W. Allen: Failure Mechanism Characteristics of Compression Loaded Laminates Containing Local Discontinuities. Presented at the ASTM Symposium on Delamination and Debonding of Materials, November 8-10, 1983, Pittsburgh, Pennsylvania. ASTM STP Pending.  
(Subject Category 24 RTOP 505-33-33)
792. Yager, Thomas J.: Review of Factors Affecting Aircraft Wet Runway Performance. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0274.  
(Subject Category 05 RTOP 505-44-33)
793. Yager, Thomas J.: Friction Assessment of Shuttle Orbiter Landing Runway Surfaces. Presented at the AIAA Shuttle Environment and Operations Conference, October 31 - November 2, 1983, Washington, DC. AIAA Paper No. 83-2664.  
(Subject Category 14 RTOP 505-45-23)

794. Yager, Thomas J.: Overview of FAA/NASA Aircraft/Ground Vehicle Runway Friction Program. Presented at the ASTM E-17 Committee Meeting, December 5-7, 1983, Bal Harbour, Florida.  
(Subject Category 05 RTOP 505-45-23)

#### Technical Talks

795. Bostic, Susan W.: Solution of Tridiagonal Systems of Equations on the Finite Element Machine. Presented at the 1983 SIAM Conference on Parallel Processing for Scientific Computing, November 10-11, 1983, Norfolk, Virginia.  
(Subject Category 62 RTOP 505-37-13)
796. Fulton, Robert E.: Management of CAD/CAM Information: The Key to Improved Manufacturing Productivity. Presented at the WCGA/NCGA Defense Computers-Graphics '83 Conference, October 10-14, 1983, Washington, DC.  
(Subject Category 62 RTOP 505-37-13)
797. McGowan, Paul: Dynamics of a Pretensioned Space Structure: The Wire-Stiffened Truss Column. Presented at the ASME Winter Annual Meeting, November 15-16, 1983, Boston, Massachusetts.  
(Subject Category 39 RTOP 506-53-53)
798. Sawyer, James Wayne: Experimental Evaluation of Thermal-Stress-Free Fastening Techniques for 2-Dimensional Carbon-Carbon Composites. Presented at the Joint Government Meeting on Carbon-Carbon Composite Material, September 7, 1983, Arlington, Virginia.  
(Subject Category 39 RTOP 506-53-43)
799. Storaasli, Olaf O.; Fulton, Robert E.; and Ransom, Jonathan B.: An Application of Parallel Computing to Nonlinear Structural Analysis. Presented at the 1983 SIAM Conference on Parallel Processing for Scientific Computing, November 10-11, 1983, Norfolk, Virginia.  
(Subject Category 62 RTOP 505-37-13)
800. Storaasli, Olaf O.: Application of Microcomputers in Structural Engineering. Presented at the 28th Annual Structural Engineering Conference, March 29, 1983, Lawrence, Kansas.  
(Subject Category 60 RTOP 505-37-13)
801. Thomson, Robert G.: Panel Presentation entitled: Caution: Airplanes are Hazardous to Children's Health. Presented at the 54th Annual Scientific Meeting of the Aerospace Medical Association, May 23, 1983, Houston, Texas.  
(Subject Category 39 RTOP 505-33-53)
802. Turner, James D.; Chun, Hon M.; and Juang, Jer-Nan: Closed Form Solutions for a Class of Optimal Quadratic Tracking Problems. Presented at the 22nd IEEE Conference on Decision and Control, December 14-16, 1983, San Antonio, Texas.  
(Subject Category 39 RTOP 506-53-53)



803. Williams, Jerry G.; Starnes, James H., Jr.; and Waters, W. Allen: Application of Kevlar-Epoxy in Damage-Tolerant Compression-Loaded Structures. Presented at the Army/Navy/AF/NASA/FAA Sixth Conference on Fibrous Composites in Structural Design, January 24-27, 1983, New Orleans, Louisiana.  
(Subject Category 06 RTOP 505-33-33)
804. Yager, Thomas J.: Results from Previous Aircraft Ground Handling Performance Studies and an Overview of On-Going Research Efforts. Presented at the 1983 SAE Aerospace Congress & Exposition, October 3-6, 1983, Long Beach, California.  
(Subject Category 05 RTOP 505-45-23)

#### Computer Programs

805. Anderson, Melvin S.; Stroud, W. Jefferson; Durling, Barbara J.; and Rau, Timothy R. (Langley Research Center); and Lotts, Christine G. (Kentron International, Inc.): VAX Version of PASCO: Structural Panel Analysis and Sizing Code (DEC VAX 11/780 Version). Program No. LAR-13164. Submitted 1983.  
(Subject Category 39)
806. Fishwick, Paul A. (Kentron International, Inc.): High Level Data Abstraction System (HILDA). Program No. LAR-13244. Submitted 1983.  
(Subject Category 61)

#### Tech Briefs

807. Bluck, R. M.; Grotbeck, G. H.; and Reighard, W. M. (Lockheed Missiles & Space Company, Inc.): Fabrication of Graphite/Epoxy Column Elements. NASA Tech Brief LAR-12915.
808. Bush, Harold G. (Langley Research Center); and Bluck, Ray M.; and Johnson, Robert R. (Lockheed Missiles and Space Company, Inc.): Fabrication of Slender Struts for Deployable Antennas. NASA Tech Brief LAR-13136.
809. Bush, Harold G.; and Mikulas, Martin M., Jr. (Langley Research Center); and Wallsom, Richard E. (Kentron International, Inc.): Synchronously Deployable Truss. NASA Tech Brief LAR-13117.
810. Carden, Huey D.; and Hayduk, Robert J. (Langley Research Center); and Cronkhite, J. D.; and Berry, V. L. (Bell Helicopter Textron, Inc.): Five Concepts of Energy-Absorbing Airframe Structures for General Aviation. NASA Tech Brief LAR-12808.
811. Carden, Huey D.; and McGehee, John R.: Flexible Aircraft Takeoff and Landing Analysis. NASA Tech Brief LAR-12992.
812. Davis, Randall C.; Bales, Thomas T.; Royster, Dick M.; and Jackson, L. Robert: Curved Caps Raise Corrugation Strength. NASA Tech Brief LAR-12884.

813. Dotson, Ronald Dayle; and Jacquemin, Georges Guy (Lockheed Missiles and Space Company, Inc.): Antenna Mast Internal Automatic Erection System. NASA Tech Brief LAR-13115.
814. Durling, Barbara J.; and Rau, Timothy R. (Langley Research Center); and Lotts, Christine G. (Kentron International, Inc.): Panel Analysis and Sizing Code (DEC VAX Version). NASA Tech Brief LAR-13164.
815. Erickson, Wayne J.; Gray, Frederic P.; Comfort, Dennis L.; and Wahlstrom, Stig O. (Boeing Commercial Airplane Company); and Von Limbach, Geoffrey (Boeing Computer Services Company); and Storaasli, Olaf O. (Langley Research Center): Relational Information Management Data Base System. NASA Tech Brief LAR-12943.
816. Ibrahim, S. R. (Old Dominion University Research Foundation): Time-Domain Modal Vibration Identification. NASA Tech Brief LAR-12924.
817. Jackson, L. Robert; Davis, Randall C.; Taylor, Allan H.; McWithey, Robert R.; Blosser, Max L.: DAZE Fasteners, Inserts, Bushings. NASA Tech Brief LAR-13009.
818. Mikulas, Martin M., Jr. (Langley Research Center); and Crawford, Robert F. (General Research Corporation): Sequentially Deployable Tetrahedral Beam. NASA Tech Brief LAR-13098.
819. Mikulas, Martin M., Jr.; Rhodes, Marvin D.; and Simonton, J. Wayne: Deployable Geodesic Truss. NASA Tech Brief LAR-13113.
820. Mikulas, Martin M., Jr.; and Rhodes, Marvin D.: Deployable M-Braced Truss. NASA Tech Brief LAR-13081.
821. Skoumal, Donald E.; and Cushman, James B. (Boeing Aerospace Company): Bonded and Bolted Graphite/Polyimide Composite Joints. NASA Tech Brief LAR-13090.
822. Skoumal, Donald E.; and Cushman, James B. (Boeing Aerospace Company): Hybrid Joints for Improved Efficiency. NASA Tech Brief LAR-13091.
823. Taylor, Allan H.; Jackson, L. Robert; and Huffman, Jarrett K.: Vortex Lift Augmentation by Suction. NASA Tech Brief LAR-12969.
824. Williams, Jerry G. (Langley Research Center); and Palmer, Raymond J.; and Tucci, Allan T. (McDonnell Douglas Corporation): Continuous-Filament Isogrid Composite Panel. NASA Tech Brief LAR-12975.

#### Patents

825. McWithey, Robert R.; Royster, Dick M.; and Bales, Thomas T.: The Metal Matrix Composite Structural Panel Construction. U.S. Patent 4,411,380. Issued October 25, 1983.  
(Subject Category 39)

PUBLICATIONS FOR LOADS AND AEROELASTICITY DIVISION

Formal Reports

826. Byrdsong, Thomas A.; and Brooks, Cuyler W., Jr.: Wind-Tunnel Investigation of Aerodynamic Loading on a 0.237-Scale Model of a Remotely Piloted Research Vehicle With a Thick, High-Aspect-Ratio Supercritical Wing. NASA TM-84614, June 1983, 213 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 534-02-13)
827. Byrdsong, Thomas A.; and Brooks, Cuyler W., Jr.: Wind-Tunnel Investigation of Aerodynamic Loading on a 0.237-Scale Model of a Remotely Piloted Research Vehicle With a Thick, High-Aspect-Ratio Supercritical Wing. Supplement to NASA TM-84614, June 1983, 176 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 534-02-13)
828. Deveikis, William D.: Effects of Flow Separation and Cove Leakage on Pressure and Heat-Transfer Distributions Along a Wing-Cove-Elevon Configuration at Mach 6.9. NASA TP-2127, June 1983, 93 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-63)
829. Noor, Ahmed K.; and Balch, Chad D.: Hybrid Perturbation/Bubnov-Galerkin Technique for Nonlinear Thermal Analysis. NASA TP-2145, June 1983, 26 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)
830. Noor, Ahmed K.; Balch, Chad D.; and Shibut, Macon A.: Reduction Methods for Nonlinear Steady-State Thermal Analysis. NASA TP-2098, March 1983, 47 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)
831. \*Yeager, William T., Jr.; and \*Mantay, Wayne R.: Loads and Performance Data From a Wind-Tunnel Test of Model Articulated Helicopter Rotors With Two Different Blade Torsional Stiffnesses. NASA TM-84573, AVRADCOM TR 82-B-9, May 1983, 321 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-42-13)

Quick-Release Technical Memorandums

832. Adelman, Howard M.: Thermal Analysis Research Applicable to Space Station Technology Needs. NASA TM-84658, April 1983, 52 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)
833. Avery, Don E.; Kerr, Patricia A.; and Wieting, Allan R.: Experimental Aerodynamic Heating to Simulated Shuttle Tiles. NASA TM-84654, April 1983, 11 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-51-23)

834. Basiulis, Al; and Camarda, Charles J.: Design, Fabrication and Test of Liquid Metal Heat-Pipe Sandwich Panels. NASA TM-84631, April 1983, 8 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)
835. Bey, Kim S.: Analytical Prediction of Aerothermal Environment in a Wing-Elevon Cove. NASA TM-85711, November 1983, 9 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)
836. Bland, Samuel R.; and Edwards, John W.: Airfoil Shape and Thickness Effects on Transonic Airloads and Flutter. NASA TM-84632, March 1983, 9 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-33-53)
837. Camarda, C. J.; and Basiulis, A.: Radiant Heating Tests of Several Liquid Metal Heat-Pipe Sandwich Panels. NASA TM-85669, August 1983, 8 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)
838. Gardner, James E.: Loads and Aeroelasticity Division Research and Technology Accomplishments for FY 1982 and Plans for FY 1983. NASA TM-84594, January 1983, 166 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-33-43)
839. Haftka, Raphael T.; and Adelman, Howard M.: An Analytical Investigation of Shape Control of Large Space Structures by Applied Temperatures. NASA TM-85649, June 1983, 73 p.  
(Avail: NTIS                      Subject Category 18                      RTOP 506-53-53)
840. \*Mantay, Wayne R.; and \*Yeager, William T., Jr.: Parametric Tip Effects for Conformable Rotor Applications. NASA TM-85682, AVRADCOM TR 83-B-4, August 1983, 30 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-42-23)
841. McCain, William E.: Comparison of Analytical and Experimental Steady- and Unsteady-Pressure Distributions at Mach Number 0.78 for a High-Aspect-Ratio Supercritical Wing Model With Oscillating Control Surfaces. NASA TM-84589, January 1983, 55 p.  
(Avail: IAC                      Subject Category 02                      RTOP 505-33-53)
842. Newsom, Jerry R.; and Mukhopadhyay, V.: The Use of Singular Value Gradients and Optimization Techniques to Design Robust Controllers for Multiloop Systems. NASA TM-85720, November 1983, 9 p.  
(Avail: NTIS                      Subject Category 63                      RTOP 505-33-43)
843. Newsom, Jerry R.; Pototzky, Anthony S.; and Abel, Irving: Design of the Flutter Suppression System for DAST ARW-1R - A Status Report. NASA TM-84642, March 1982, 14 p.  
(Avail: NTIS                      Subject Category 63                      RTOP 505-33-43)
844. Olsen, George C.; and Smith, R. E., Jr.: Analysis of Aerothermal Loads on Spherical Dome Protuberances. NASA TM-84656, April 1983, 12 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-53-53)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

845. Ricketts, Rodney H.: Structural Testing for Static Failure, Flutter and Other Scary Things. NASA TM-84606, January 1983, 42 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-43)
846. Ricketts, Rodney H.; Sandford, Maynard C.; Seidel, David A.; and Watson, Judith J.: Transonic Pressure Distributions on a Rectangular Supercritical Wing Oscillating in Pitch. NASA TM-84616, March 1983, 11 p.  
(Avail: NTIS Subject Category 02 RTOP 505-33-43)
847. Ricketts, Rodney H.; Watson, Judith J.; Sandford, Maynard C.; and Seidel, David A.: Geometric and Structural Properties of a Rectangular Supercritical Wing Oscillated in Pitch for Measurement of Unsteady Transonic Pressure Distributions. NASA TM-85673, November 1983, 18 p.  
(Avail: IAC Subject Category 02 RTOP 505-33-43)
848. Robinson, James C.: Application of a Systematic Finite-Element Model Modification Technique to Dynamic Analysis of Structures. NASA TM-83292, January 1983, 15 p.  
(Avail: NTIS Subject Category 39 RTOP 505-33-43)
849. Seidel, David A.; Bennett, Robert M.; and Ricketts, Rodney H.: Some Recent Applications of XTRAN3S. NASA TM-85641, May 1983, 11 p.  
(Avail: NTIS Subject Category 02 RTOP 505-33-43)
850. Sobieszczanski-Sobieski, Jaroslaw; James, Benjamin; and Dovi, Augustine: Structural Optimization by Multilevel Decomposition. NASA TM-84641, March 1983, 21 p.  
(Avail: NTIS Subject Category 05 RTOP 505-33-53)
851. Whitlow, Woodrow, Jr.: XTRAN2L: A Program for Solving the General-Frequency Unsteady Transonic Small Disturbance Equation. NASA TM-85723, November 1983, 28 p.  
(Avail: NTIS Subject Category 02 RTOP 505-33-43)
852. Wieting, Allan R.; Walsh, Joanne L.; and Bey, Kim S.: Aerothermal Environment in Control Surface Gaps in Hypersonic Flow - An Overview. NASA TM-84662, April 1983, 9 p.  
(Avail: NTIS Subject Category 34 RTOP 506-53-33)
853. \*Yeager, William T., Jr.; Hamouda, M-Nabil H.; and \*Mantay, Wayne R.: Aeromechanical Stability of a Hingeless Rotor in Hover and Forward Flight: Analysis and Wind Tunnel Tests. NASA TM-85683, AVRADCOM TR 83-B-5, August 1983, 20 p.  
(Avail: NTIS Subject Category 39 RTOP 505-42-23)

# Contractor Reports

854. Barthelemy, Jean-Francois Marie: Development of a Multilevel Optimization Approach to the Design of Modern Engineering Systems. (NAG1-145 Virginia Polytechnic Institute and State University.) NASA CR-172184, August 1983, 238 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-33-53)
855. Egolf, T. Alan; and Landgrebe, Anton J.: Helicopter Rotor Wake Geometry and Its Influence in Forward Flight, Volume I - Generalized Wake Geometry and Wake Effect on Rotor Airloads and Performance. (NAS1-14568 United Technologies Research Center.) NASA CR-3726, October 1983, 224 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-42-23)
856. Egolf, T. Alan; and Landgrebe, Anton J.: Helicopter Rotor Wake Geometry and Its Influence in Forward Flight, Volume II - Wake Geometry Charts. (NAS1-14568 United Technologies Research Center.) NASA CR-3727, October 1983, 208 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-42-23)
857. Gabel, R.; Kesack, W. J.; and Reed, D. A.: Planning, Creating and Documenting a NASTRAN Finite Element Vibrations Model of a Modern Helicopter - Modeling Documentation Report. (NAS1-16460 Boeing Vertol Company.) NASA CR-166077, March 1983, 286 p.  
(Avail: STIF                      Subject Category 39                      RTOP 532-06-13)
858. Gabel, R.; Reed, D. A.; and Ricks, R.: Planning, Creating and Documenting a NASTRAN Finite Element Vibrations Model of a Modern Helicopter, Ground Shake Test - Results and Correlation Report. (NAS1-16460 Boeing Vertol Company.) NASA CR-166107, May 1983, 398 p.  
(Avail: STIF                      Subject Category 39                      RTOP 532-06-13)
859. Gangwani, Santu T.: Synthesized Airfoil Data Method for Prediction of Dynamic Stall and Unsteady Airloads. (NAS1-16803 United Technologies Research Center.) NASA CR-3672, February 1983, 136 p.  
(Avail: IAC                      Subject Category 02                      RTOP 505-42-23)
860. Liu, Wing Kam: Mixed Time Integration Methods for Transient Thermal Analysis of Structures. (NAG1-210 Northwestern University.) NASA CR-172209, September 1983, 55 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 506-53-53)
861. St. Hilaire, A. O.; and Carta, F. O.: Analysis of Unswept and Swept Wing Chordwise Pressure Data From an Oscillating NACA 0012 Airfoil Experiment, Volume I - Technical Report. (NAS1-16041 United Technologies Research Center.) NASA CR-3567, March 1983, 104 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-42-13)
862. St. Hilaire, A. O.; and Carta, F. O.: Analysis of Unswept and Swept Wing Chordwise Pressure Data From an Oscillating NACA 0012 Airfoil Experiment, Volume II - Data Report. (NAS1-16041 United Technologies Research Center.) NASA CR-165927, January 1983, 321 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-42-12)

# Journal Articles and Other Publications

863. Barthelemy, Jean-Francois M.; and Sobieszczanski-Sobieski, Jaroslaw: Extrapolation of Optimum Design Based on Sensitivity Derivatives. AIAA Journal, Volume 21, No. 5, May 1983, p. 797-799.  
(Subject Category 05 RTOP 505-33-63)
864. Barthelemy, Jean-Francois; and Sobieszczanski-Sobieski, Jaroslaw: Optimum Sensitivity Derivatives of Objective Functions in Nonlinear Programming. AIAA Journal, Volume 21, No. 6, June 1983, p. 913-915.  
(Subject Category 05 RTOP 505-33-63)
865. Dowell, E. H.; Williams, M. H.; and Bland, S. R.: Linear/Nonlinear Behavior in Unsteady Transonic Aerodynamics. AIAA Journal, Volume 21, No. 1, January 1983, p. 38-46.  
(Subject Category 02 RTOP 505-33-53)
866. Edwards, John W.: Flight Test Results of an Active Flutter Suppression System. Journal of Aircraft, Volume 20, No. 3, March 1983, p. 267-274.  
(Subject Category 05 RTOP 505-33-43)
867. Edwards, John W.; Bennett, Robert M.; Whitlow, Woodrow, Jr.; and Seidel, David A.: Time-Marching Transonic Flutter Solutions Including Angle-of-Attack Effects. Journal of Aircraft, Volume 20, Number 11, November 1983, p. 899-906.  
(Subject Category 39 RTOP 505-33-53)
868. Kelly, H. Neale; Rummler, Donald R.; Jackson, L. Robert: Research in Structures and Materials for Future Space Transportation Systems - An Overview. Journal of Spacecraft and Rockets, Volume 20, No. 1, January-February 1983, p. 89-96.  
(Subject Category 18 RTOP 506-53-73)
869. Kelly, H. Neale; and Webb, Granville L.: Assessment of Alternate Thermal Protection Systems for the Space Shuttle Orbiter. Progress in Astronautics and Aeronautics, Volume 85, 1983, p. 89-96.  
(Subject Category 02 RTOP 506-53-33)
870. Molusis, John A.; Hammond, C. E.; and \*Cline, John H.: A Unified Approach to the Optimal Design of Adaptive and Gain Scheduled Controllers to Achieve Minimum Helicopter Rotor Vibration. American Helicopter Society Journal, Volume 28, No. 2, April 1983, p. 9-18.  
(Subject Category 39 RTOP 505-42-39)
871. Ruhlin, C. L.; Rauch, F. J., Jr.; and Waters, C.: Transonic Flutter Model Study of a Supercritical Wing and Winglet. Journal of Aircraft, Volume 20, No. 8, August 1983, p. 711-716.  
(Subject Category 05 RTOP 505-33-53)
872. Ruhlin, Charles L.; Watson, Judith J.; Ricketts, Rodney H.; and Doggett, Robert V., Jr.: Evaluation of Four Subcritical Response Methods for On-Line Prediction of Flutter Onset in Wind Tunnel Tests. Journal of Aircraft, Volume 20, No. 10, October 1983, p. 835-840.  
(Subject Category 05 RTOP 505-43-33)

#### Meeting Presentations

873. Albertson, Cindy W.: Aerothermal Environment of an Apparatus for Testing Curved TPS Concepts. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 34 RTOP 506-51-23)
874. Avery, Don E.; Kerr, Patricia A.; and Wieting, Allan R.: Experimental Aerodynamic Heating to Simulated Shuttle Tiles. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1536.  
(Subject Category 34 RTOP 506-51-23)
875. Bland, Samuel R.; and Edwards, John W.: Airfoil Shape and Thickness Effects on Transonic Airloads and Flutter. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0959-CP.  
(Subject Category 02 RTOP 505-33-53)
876. Camarda, Charles J.; and Basiulis, Al: Radiant Heating Tests of Several Liquid Metal Heat-Pipe Sandwich Panels. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0319  
(Subject Category 34 RTOP 506-53-33)
877. Haftka, Raphael T.; Adelman, Howard M.: An Analytical Investigation of Shape Control of Large Space Structures by Applied Temperatures. Presented at the VPI&SU/AIAA Fourth Symposium on Dynamics and Control of Large Structures, June 6-8, 1983, Blacksburg, Virginia. Proceedings Pending.  
(Subject Category 18 RTOP 506-53-53)
878. Hammond, C. Eugene; \*Cline, John H.; Wood, E. Robert; and Powers, Robert W.: Developing and Flight Testing of a Higher Harmonic Control System. Presented at the American Helicopter Society's 39th Annual Forum and Technical Display, May 9-11, 1983, St. Louis, Missouri. In Proceedings, May 1983, p. 592-612.  
(Subject Category 02 RTOP 505-42-23)
879. Kelly, H. Neale: Recent Experience and Planned Modifications of the Langley 8-Foot High Temperature Tunnel. Presented at the Fifty-Ninth Semi-Annual Meeting of the Supersonic Tunnel Association, April 6-8, 1983, Colorado Springs, Colorado.  
(Subject Category 09 RTOP 506-53-33)
880. \*Mantay, Wayne R.; and \*Yeager, William T., Jr.: Parametric Tip Effects for Conformable Rotor Applications. Presented at the Ninth European Rotorcraft Forum, September 13-15, 1983, Stresa, Italy. NASA TM-85682.  
(Subject Category 02 RTOP 505-42-23)

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\*Army Structures Laboratory, USARTL (AVRADCOM)



881. Murphy, A. C.; Rogers, W. A.; Shirk, M. H.; and Ruhlin, C. L.: The Design, Testing and Analysis of Aeroelastically Tailored Transonic Flutter Model Wings. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-1027.  
(Subject Category 05 RTOP 505-33-53)
882. Newsom, Jerry R.; and Abel, Irving: Experiences With the Design and Implementation of Flutter Suppression Systems. Presented at the 1st Annual NASA Aircraft Controls Workshop, October 25-27, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 39 RTOP 505-33-53)
883. Newsom, Jerry R.; and Mukhopadhyay, V.: The Use of Singular Value Gradients and Optimization Techniques to Design Robust Controllers for Multiloop Systems. Presented at the AIAA Guidance and Control Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2191-CP.  
(Subject Category 63 RTOP 505-33-53)
884. Newsom, Jerry R.; Pototzky, Anthony S.; and Abel, Irving: Design of the Flutter Suppression System for DAST ARW-IR - A Status Report. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0990.  
(Subject Category 39 RTOP 505-33-53)
885. Olsen, George C.; and Smith, R. E., Jr.: Analysis of Aerothermal Loads on Spherical Dome Protuberances. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1557.  
(Subject Category 34 RTOP 506-51-23)
886. Ricketts, Rodney H.; Sandford, Maynard C.; Seidel, David A.; and Watson, Judith J.: Transonic Pressure Distributions on a Rectangular Supercritical Wing Oscillating in Pitch. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0923-CP. (Also published as NASA TM-84616.)  
(Subject Category 02 RTOP 505-33-53)
887. Robinson, James C.; Bailey, James P.; Wurster, K. E.; and Powell, R. W.: Overview of a Preliminary Aerothermostructural Design of a Tip-Fin Controller for Space Shuttle Orbiter. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 16 RTOP 506-53-53)
888. Seidel, David A.; Bennett, Robert M.; and Ricketts, Rodney H.: Some Recent Applications of XTRAN3S. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1811.  
(Subject Category 02 RTOP 505-33-43)

889. Seidel, David A.; Bennett, Robert M.; and Whitlow, Woodrow, Jr.: An Exploratory Study of Finite Difference Codes Grids for Transonic Unsteady Aerodynamics. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0503  
(Subject Category 02 RTOP 505-33-53)
890. Shideler, John L.; and Blair, W.: Design and Fabrication of Curved Superalloy Honeycomb Prepackaged TPS. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 34 RTOP 506-53-33)
891. Shideler, John L.; Webb, G. L.; and Dearing, Bill: Verification Tests of Advanced Multiwall and Prepackaged Metallic TPS. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 34 RTOP 506-53-33)
892. Sobieszczanski-Sobieski, Jaroslaw: Structural Optimization: Challenges and Opportunities. Presented at the International Conference on Modern Vehicle Design Analysis, June 22-24, 1983, London, England.  
(Subject Category 05 RTOP 505-33-53)
893. Sobieszczanski-Sobieski, Jaroslaw; James, Benjamin; and Dovi, Augustine: Structural Optimization by Multilevel Decomposition. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0832-CP.  
(Subject Category 05 RTOP 505-33-63)
894. Turner, C. D.; and Ricketts, R. H.: Aeroelastic Considerations for Continuous Patrol/High Altitude Surveillance Platforms. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0924-CP.  
(Subject Category 39 RTOP 505-33-53)
895. Tyson, Richard W.: Acoustic Tests of Direct Bond FRCI Tiles on GR/PI Structure. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 34 RTOP 506-53-33)
896. Webb, Granville L.; and Pittman, Claud M.: Design, Fabrication, and Test of a Multipost ACC TPS Concept. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 34 RTOP 506-53-33)
897. Wieting, Allan R.; Walsh, Joanne L.; and Bey, K. S.: Aerothermal Environment in Control Surface Gaps in Hypersonic Flow - An Overview. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1483.  
(Subject Category 34 RTOP 506-51-23)

898. \*Yeager, William T., Jr.; Hamouda, M-Nabil H.; and \*Mantay, Wayne R.: Aeromechanical Stability of a Hingeless Rotor in Hover and Forward Flight: Analysis and Wind Tunnel Tests. Presented at the Ninth European Rotorcraft Forum, September 13-15, 1983, Stresa, Italy. NASA TM-85683. (Subject Category 05 RTOP 505-42-23)

#### Technical Talks

899. Adelman, Howard M.: Thermal Analysis Research Applicable to Space Station Technology Needs. Presented at the NASA Space Station Technology Workshop, March 28-31, 1983, Williamsburg, Virginia. (Subject Category 34 RTOP 506-53-53)
900. Chipman, Richard; Rauch, Frank; Rimer, Melvin; and Ricketts, Rodney H.: Transonic Body-Freedom-Flutter Test of a Forward-Swept-Wing Model with RSS. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. (Subject Category 39 RTOP 505-33-43)
901. Cole, Stanley R.: Determining Reynolds Number Effects on Flutter. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia. (Subject Category 39 RTOP 505-33-43)
902. Edwards, John W.: Status of U. S. Effort on Transonic Unsteady Aerodynamic Computations for AGARD Standard Aeroelastic Configurations. Presented at the AGARD SMP Specialists Meeting on Materials Substitution and Recycling, October 12, 1983, Vimeiro, Portugal. (Subject Category 02 RTOP 505-33-43)
903. Ricketts, Rodney H.: Making Your Airplane Safe From Flutter. Presented at the 1983 Annual Convention of the Experimental Aircraft Association, July 30 - August 6, 1983, Oshkosh, Wisconsin. (Subject Category 05 RTOP 505-33-43)
904. Runyan, Harry L.; and Tai, Hsiang: Compressible Lifting Surface Theory Applied to a Helicopter Rotor in Forward Flight. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. (Subject Category 02 RTOP 505-33-43)
905. Sobieszczanski-Sobieski, Jaroslaw: Analysis and Synthesis. Presented at the NASA Space Station Technology Workshop, March 28-31, 1983, Williamsburg, Virginia. (Subject Category 05 RTOP 505-33-53)
906. Sobieszczanski-Sobieski, Jaroslaw: Large-Scale Structural Optimization. Presented at the University of Iowa 18th Midwestern Mechanics Conference, May 16-18, 1983, Iowa City, Iowa. (Subject Category 05 RTOP 505-33-53)

907. Sobieszczanski-Sobieski, Jaroslaw: Future of Optimization. Presented at the American Helicopter Society's 39th Annual Forum & Technical Display, May 9-11, 1983, St. Louis, Missouri.  
(Subject Category 05 RTOP 505-33-53)
908. Sobieszczanski-Sobieski, Jaroslaw: Multi-Disciplinary Analysis and Optimization. Presented at the University of Iowa, 18th Midwestern Mechanics Conference, May 16-18, 1983, Iowa City, Iowa.  
(Subject Category 05 RTOP 505-33-53)
909. Yates, E. Carson, Jr.: Recent Developments in Unsteady Aerodynamics and Aeroelasticity. Presented at the 1983 NASA/ASEE Summer Faculty Research Program Lecture Series, June 16, 1983, Hampton, Virginia.  
(Subject Category 02 RTOP 505-33-43)

#### Computer Programs

No computer programs.

#### Tech Briefs

910. Avery, Don E.; Ballard, Gary K.; and Wilson, Maywood L. (Langley Research Center); and Allen, John H., Sr. (Lyndon B. Johnson Space Center): Heat Transfer Model With Concentrated Single-Wire Thermocouples Fabricated by Electroless Plating. NASA Tech Brief LAR-13087.
911. Farmer, Moses G.: Two-Degree-of-Freedom Mount System for Flutter Models. NASA Tech Brief LAR-12950.
912. Hess, Robert W.; Davis, William T.; and Bolt, Pamela A.: Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers. NASA Tech Brief LAR-13094.
913. Palmer, Louis W. (Rockwell International Corporation): Ball Joint for Quick Connections and Disconnections. NASA Tech Brief LAR-12896.
914. Palmer, Louis W.; and Billyard, Jack A. (Rockwell International Corporation): Quick-Disconnect Fastener. NASA Tech Brief LAR-12895.
915. Rogers, James L., Jr.; and Sobieszczanski-Sobieski, Jaroslaw (Langley Research Center); Bhat, Rama B. (George Washington University); Dovi, A. R.; and Riley, K. M. (Kentron International, Inc.): Structural Optimization. NASA Tech Brief LAR-13010.
916. Schmit, Lucien A., Jr.; and Fleury, Claude (University of California, Los Angeles): Approximation Concepts Code for Efficient Structural Synthesis. NASA Tech Brief LAR-13107.

#### Patents

917. Doggett, Robert V., Jr.; and Ricketts, Rodney H.: Aeroelastic Instability Stoppers for Wind Tunnels. U.S. Patent 4,372,158. Issued February 8, 1983.  
(Subject Category 44)
918. Doggett, Robert V., Jr.; and Ricketts, Rodney H.: Aeroelastic Instability Stoppers for Wind Tunnels. U.S. Patent 4,372,159. Issued February 8, 1983.  
(Subject Category 44)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR AERONAUTICS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR LOW-SPEED AERODYNAMICS DIVISION

Formal Reports

919. Applin, Zachary T.: Flow Improvements in the Circuit of the Langley 4- by 7-Meter Tunnel. NASA TM-85662, December 1983, 53 p.  
(Avail: NTIS Subject Category 02 RTOP 505-42-23)
920. Coe, Paul L., Jr.; Kjeldgaard, Scott O.; and Gentry, Garl L., Jr.: Low-Speed Aerodynamic Characteristics of a Highly Swept, Untwisted, Uncambered Arrow Wing. NASA TP-2176, October 1983, 68 p.  
(Avail: NTIS Subject Category 02 RTOP 505-45-43)
921. Grafton, Sue B.; Croom, Mark A.; and Nguyen, Luat T.: High-Angle-of-Attack Stability Characteristics of a Three-Surface Fighter Configuration. NASA TM-84584, March 1983, 58 p.  
(Avail: NTIS Subject Category 08 RTOP 505-43-13)
922. \*Hoad, Danny R.; Rhodes, David B.; and Meyers, James F.: Preliminary Rotor Wake Measurements With a Laser Velocimeter. NASA TM-83246, AVRADCOM TR 82-B-7, March 1983, 90 p.  
(Avail: NTIS Subject Category 34 RTOP 505-42-23)
923. Jewel, Joseph W., Jr.: Tabulations of Recorded Gust and Maneuver Accelerations, and Derived Gust Velocities for Airplanes in the NASA VGH General Aviation Program. NASA TM-84660, September 1983, 31 p.  
(Avail: NTIS Subject Category 03 RTOP 505-45-03)
924. Jordan, Frank L., Jr.: Flow Visualization of the Wake of a Transport Aircraft Model With Lateral-Control Oscillations. NASA TM-84623, June 1983, 26 p.  
(Avail: NTIS Subject Category 01 RTOP 505-31-93)
925. Quinto, P. Frank; and Paulson, John W., Jr.: Flap Effectiveness on Subsonic Longitudinal Aerodynamic Characteristics of a Modified Arrow Wing. NASA TM-84582, March 1983, 51 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
926. Quinto, P. Frank; and Paulson, John W., Jr.: Thrust-Induced Effects on Subsonic Longitudinal Aerodynamic Characteristics of a Vectored-Engine-Over-Wing Configuration. NASA TP-2228, December 1983, 54 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
927. Usry, J. W.: Comparison of Low-Altitude Wind-Shear Statistics Derived From Measured and Proposed Standard Wind Profiles. NASA TM-85668, November 1983, 45 p.  
(Avail: NTIS Subject Category 05 RTOP 505-45-03)

---

\*Army Structures Laboratory, USARTL (AVRADCOM)

# Quick-Release Technical Memorandums

928. Kjelgaard, Scott O.; and Morgan, Harry L., Jr.: Pressure Distribution Data From Tests of 2.29 M (7.5 Ft) Span EET High-Lift Transport Aircraft Model in the Ames 12-Foot Pressure Tunnel. NASA TM-84517, April 1983, 668 p.  
(Avail: IAC Subject Category 01 RTOP 505-45-43)

## Contractor Reports

929. Bristow, D. R.; and Hawk, J. D.: Subsonic Panel Method for Designing Wing Surfaces From Pressure Distribution. (NAS1-16156 McDonnell Aircraft Company.) NASA CR-3713, July 1983, 58 p.  
(Avail: NTIS Subject Category 05 RTOP 505-31-03)
930. Downing, David R.; Hammond, Terry A.; and Amin, Shailesh P.: Ride Quality Systems for Commuter Aircraft. (NAG1-282 The University of Kansas Center for Research, Inc.) NASA CR-166118, May 1983, 92 p.  
(Avail: NTIS Subject Category 08 RTOP 505-45-23)
931. Lapins, Maris; Martorella, R. Paul; Klein, Robert W.; Meyer, Rudolph C.; and Sturm, Michael J.: Control Definition Study for Advanced Vehicles. (NAS1-16636 Grumman Aerospace Corporation.) NASA CR-3738, November 1983, 204 p.  
(Avail: NTIS Subject Category 08 RTOP 505-43-13)
932. Pierce, G. Alvin; and Vaidyanathan, Anand R.: Helicopter Rotor Loads Using Matched Asymptotic Expansions: User's Manual. (NAS1-16817 Georgia Institute of Technology.) NASA CR-166093, May 1983, 92 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
933. Pierce, G. Alvin; and Vaidyanathan, Anand R.: Helicopter Rotor Loads Using Discretized Matched Asymptotic Expansions. (NAS1-16817 Georgia Institute of Technology.) NASA CR-166092, May 1983, 76 p.  
(Avail: NTIS Subject Category 02 RTOP 505-42-23)
934. Ralston, John N.: Rotary Balance Data for a Typical Single-Engine General Aviation Design for an Angle-of-Attack Range of 8° to 90°. I. - Influence of Airplane Components for Model D. (NAS1-16205 Bihrl Applied Research, Inc.) NASA CR-3246, March 1983, 390 p.  
(Avail: NTIS Subject Category 02 RTOP 505-41-13)
935. Van Dam, C. P.: Analysis of Nonplanar Wing-Tip-Mounted Lifting Surfaces on Low-Speed Airplanes. (NSG-1633 The University of Kansas Center for Research, Inc.) NASA CR-3684, June 1983, 178 p.  
(Avail: NTIS Subject Category 02 RTOP 505-45-43)



#### Journal Articles and Other Publications

936. \*Berry, John D.: Wind-Tunnel Testing of an Advanced UH-1 Type Rotor System. American Helicopter Society Journal, Volume 28, April 1983, p. 19-23.  
(Subject Category 05 RTOP 505-42-23)
937. Gunzburger, Max D.; Liu, C. H.; and Nicolaidis, R. A.: A Finite Element Method for Diffusion Dominated Unsteady Viscous Flows. Computer Methods in Applied Mechanics and Engineering, Volume 39, 1983, p. 55-67.  
(Subject Category 02 RTOP 505-31-03)
938. Paulson, J. W., Jr.; Banks, D. W.; and Quinto, P. F.: Effects of Spanwise Blowing and Reverse Thrust on Fighter Low-Speed Aerodynamics. Journal of Aircraft, Volume 20, No. 2, February 1983, p. 159-164.  
(Subject Category 02 RTOP 505-43-23)
939. Whitfield, David L.; and Thomas, James L.: Transonic Viscous-Inviscid Interaction Using Euler and Inverse Boundary-Layer Equations. In Computational Methods in Viscous Flow, Third Volume on Recent Advances in Numerical Methods, July 1983.  
(Subject Category 02 RTOP 505-31-03)

#### Meeting Presentations

940. Erickson, Gary E.; and Gilbert, William P.: Experimental Investigation of Forebody and Wing Leading-Edge Vortex Interactions at High Angles of Attack. Presented at the AGARD Fluid Dynamics Panel Symposium on Aerodynamics of Vortical-Type Flow in Three Dimensions, April 25-27, 1983, Rotterdam, Netherlands.  
(Subject Category 02 RTOP 505-43-13)
941. Fisher, Bruce D.; and Plumer, J. Anderson: Lightning Attachment Patterns and Flight Conditions Experienced by the NASA F-106B Airplane. Presented at the NASA/FAA et al., 8th International Aerospace and Ground Conference on Lightning and Static Electricity, June 21-23, 1983, Fort Worth, Texas.  
(Subject Category 03 RTOP 505-44-13)
942. Gregorek, G. M.; Hoffman, M. J.; Freuhler, R. J.; Holmes, B. J.; and Obara, C. J.: Flight Performance of a Natural Laminar Flow Airfoil on a Composite Single-Engine Business Airplane. Presented at the 21st AIAA Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0055.  
(Subject Category 02 RTOP 505-45-43)

943. Gunzburger, M. D.; Nicolaidis, R. A.; and Liu, C. H.: New Descretization and Solution Techniques for Incompressible Viscous Flow Problems. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1921-CP.  
(Subject Category 02 RTOP 505-31-03)
944. Holmes, Bruce J.; Obara, Clifford J.; Gregorek, Gerald M.; Hoffman, Michael J.; and Freuhler, Rick J.: Flight Investigation of Natural Laminar Flow on the Bellanca Skyrocket II. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830717.  
(Subject Category 02 RTOP 505-41-13)
945. Johnson, J. L., Jr.; and White, E. R.: Exploratory Low-Speed Wind-Tunnel Investigation of Advanced Commuter Configurations Including an Over-the-Wing Propeller Design. Presented at the AIAA/AHS 1983 Aircraft Design, Systems, and Operations Meeting and Technical Display, October 17-19, 1983, Fort Worth, Texas. AIAA Paper No. 83-2531.  
(Subject Category 01 RTOP 505-43-13)
946. Kjølgaard, S. O.: Evaluation of a Surface Panel Method Coupled With Several Boundary-Layer Analyses. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0011.  
(Subject Category 02 RTOP 534-02-13)
947. Liu, C. H.; Thomas, J. L.; and Tung, C.: Navier-Stokes Calculations for the Vortex Wake of a Rotor in Hover. Presented at the AIAA 16th Fluid and Plasma Dynamics Conference, July 12-14, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1676.  
(Subject Category 02 RTOP 505-31-03)
948. Mazur, Vladislav; Fisher, Bruce D.; and Gerlach, John C.: Conditions Conducive to Lightning Striking an Aircraft in a Thunderstorm. Presented at the NASA/FAA et al., 8th International Aerospace and Ground Conference on Lightning and Static Electricity, June 21-23, 1983, Ft. Worth, Texas.  
(Subject Category 03 RTOP 505-44-13)
949. Morris, Dana J.; Croom, Cynthia C.; Holmes, Bruce J.; and Van Dam, Cornelis P.: NASA Wake Interactions Research and Applications. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830764.  
(Subject Category 05 RTOP 505-41-83)
950. Murri, Daniel G.; Croom, Mark A.; and Nguyen, Luat T.: High Angle-of-Attack Flight Dynamics of a Forward-Swept Wing Fighter Configuration. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1837.  
(Subject Category 08 RTOP 505-43-13)
951. Neely, William R., Jr.; and Fisher, Bruce D.: The NASA F-106B Storm Hazards Program. Presented at the SETP 27th Symposium, September 23, 1983, Lancaster, California. Proceedings Pending.  
(Subject Category 03 RTOP 505-45-03)

952. Obara, Clifford J.; and Holmes, Bruce J.: Experiences With Boundary Layer Transition Measurements and Predictions in the Flight Environment. Presented at the AIAA/AHS/IES/SETP Second Flight Testing Conference and Technical Display, November 16-18, 1983, Las Vegas, Nevada. AIAA Paper No. 83-2690.  
(Subject Category 02 RTOP 505-45-43)
953. Paulson, J. W., Jr.; Gatlin, G. M.; Quinto, P. F.; and Banks, D. W.: Trimming High Lift for STOL Fighters. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0168.  
(Subject Category 02 RTOP 505-43-23)
954. Sellers, William L., III; and \*Elliott, Joe N.: Recent Applications of a Laser Velocimeter in the Langley 4- by 7-Meter Wind Tunnel. Presented at the University of Missouri-Rolla 8th Biennial Symposium on Turbulence, September 26-28, 1983, Rolla, Missouri. Proceedings Pending.  
(Subject Category 01 RTOP 505-45-43)
955. Stewart, Eric C.; Moul, Thomas M.; and Brown, Philip W.: A Simulation Study of the Low-Speed Characteristics of a Light Twin With an Engine Out. Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2128.  
(Subject Category 01 RTOP 505-45-43)
956. Stickle, Joseph W.; and Hall, Albert W.: Operating Safely in Adverse Weather Environments. Presented at the 36th International Air Safety Seminar, November 7-11, 1983, Rio de Janeiro, Brazil.  
(Subject Category 03 RTOP 505-45-13)
957. Stough, H. Paul; DiCarlo, Daniel J.; and Stewart, Eric C.: Wing Modification for Increased Spin Resistance. Presented at the 1983 SAE General Aviation Business Aircraft Meeting and Exposition, April 12-15, 1983, Wichita, Kansas. SAE Paper No. 830720.  
(Subject Category 05 RTOP 505-45-43)
958. Thomas, J. L.; Luckring, J. M.; and Sellers, W. L., III: Evaluation of Factors Determining the Accuracy of Linearized Subsonic Panel Methods. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1826.  
(Subject Category 02 RTOP 505-31-03)

#### Technical Talks

959. Anderson, Seth B.; Enevoldson, Einar K.; and Nguyen, Luat T.: Pilot Human Factors in Stall/Spin Accidents of Supersonic Fighter Aircraft. Presented at the AGARD Conference, Flight Mechanics System Design Lessons From Operational Experience, May 10-13, 1983, Athens, Greece.  
(Subject Category 08 RTOP 505-43-13)

960. Bowman, James S., Jr.; and Patton, James M., Jr.: Results of Current Research in High Angle of Attack Phenomena. Presented at the University of Tennessee Space Institute Short Course on Flight Testing, June 16, 1983, Tullahoma, Tennessee.  
(Subject Category 02 RTOP 505-43-13)
961. Brown, Philip W.: Airplane Handling Qualities for the Designer, Builder and Test Pilot. Presented at the 1983 Annual Convention of the Experimental Aircraft Association, July 30 - August 6, 1983, Oshkosh, Wisconsin.  
(Subject Category 05 RTOP 505-33-43)
962. Chambers, Joseph R.: NASA Tests of Unconventional Configurations. Presented at the 1983 Annual Convention of the Experimental Aircraft Association, July 30 - August 6, 1983, Oshkosh, Wisconsin.  
(Subject Category 08 RTOP 505-45-43)
963. Cokeley, Ralph C.; and Person, Lee H., Jr.: Relaxed Stability Flight Test in Lockheed L-1011. Presented at the Society of Experimental Test Pilots Symposium, September 29 - October 1, 1983, Los Angeles, California.  
(Subject Category 01 RTOP 534-02-13)
964. Crabill, Norman L.: Aircraft Environmental Effects: Lightning, Winds and Turbulence, and Heavy Rain. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada.  
(Subject Category 05 RTOP 505-44-13)
965. Holmes, Bruce J.: Laminar Flow Applications for Practical Airplanes. Presented at the 1983 Experimental Aircraft Association Annual Convention, July 30 - August 6, 1983, Oshkosh, Wisconsin.  
(Subject Category 02 RTOP 505-45-43)
966. Holmes, Bruce J.: Update--NASA Natural Laminar Flow Research. Presented at the AIAA 10th Annual Technologyfest, November 4, 1983, Wichita, Kansas.  
(Subject Category 02 RTOP 505-45-43)
967. Holmes, Bruce J.: Viscous Drag Reduction Research. Presented at the University of Kansas/Texas A&M University/NASA Meeting on Aeronautics Research, September 27, 1983, Lawrence, Kansas.  
(Subject Category 02 RTOP 505-45-43)
968. Liu, Chen-Huei; and Ting, Lu: Boundary Conditions for Navier Stokes Solutions Merging With Boundary Layer and Potential Solutions. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 02 RTOP 505-31-03)
969. Stough, H. Paul: Increased Spin Resistance Through Wing Leading-Edge Modification. Presented at the 1983 Annual Convention of the Experimental Aircraft Association, July 30 - August 6, 1983, Oshkosh, Wisconsin.  
(Subject Category 05 RTOP 505-45-13)
970. Stough, H. Paul: NASA Stall/Spin Research. Presented at the FAA Accident Prevention Meeting, December 14, 1983, Washington, DC.  
(Subject Category 08 RTOP 505-45-43)

971. Weston, R. P.: Detailed Surface Pressure and Near Wake Measurements for High-Lift Semispan Wings of 0, 20, and 40 Degree Sweep. Presented at the California State University at Long Beach, Second Symposium on Numerical and Physical Aspects of Aerodynamic Flows, January 17-20, 1983, Long Beach, California.  
(Subject Category 02      RTOP 505-45-43)
972. Whitfield, D. L.; Thomas, J. L.; Jameson, A.; and Schmidt, W.: Computation of Transonic Viscous-Inviscid Interacting Flow. Presented at the California State University at Long Beach, Second Symposium on Numerical and Physical Aspects of Aerodynamic Flows, January 17-20, 1983, Long Beach, California.  
(Subject Category 02      RTOP 505-31-03)

#### Computer Programs

No computer programs.

#### Tech Briefs

973. Gracey, William: Solar House Roof Overhang Design. NASA Tech Brief LAR-13140.
974. Holmes, Bruce J.; Croom, Cynthia C.; and Kelliher, Warren C. (Langley Research Center); and Obara, Clifford J. (Kentron International, Inc.): Sublimating Chemical Method for Detecting Laminar Boundary-Layer Transition. NASA Tech Brief LAR-13089.
975. Johnson, Joseph L., Jr. (Langley Research Center); and White, Richard (Kentron International, Inc.): Over-the-Wing Propeller Concept. NASA Tech Brief LAR-13134.
976. Matza, E. C.; and While, D. M. (Vought Corporation): Blind Side High Temperature Fastener Lock. NASA Tech Brief LAR-13037.
977. Sorensen, John A.; and Waters, Mark H. (Analytical Mechanics Associates, Inc.): Vertical Profiles for Turbojet-Powered Aircraft. NASA Tech Brief LAR-12940.
978. Whipple, Raymond D.: Rigid Towline Anti-Spin Parachute System. NASA Tech Brief LAR-12979.
979. White, William L.: Bridle Attachment for Emergency Spin-Recovery Parachute System. NASA Tech Brief LAR-13076.

#### Patents

No patents.

# PUBLICATIONS FOR TRANSONIC AERODYNAMICS DIVISION

## Formal Reports

980. Allison, Dennis O.: Inviscid Analysis of Two Supercritical Laminar-Flow-Control Airfoils at Design and Off-Design Conditions. NASA TM-84657, June 1983, 20 p.  
(Avail: IAC                      Subject Category 02                      RTOP 505-31-23)
981. Bare, E. Ann; and Berrier, Bobby L.: Investigation of Installation Effects on Twin-Engine Convergent-Divergent Nozzles. NASA TP-2205, November 1983, 189 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
982. Bare, E. Ann; and Pendergraft, Odis C., Jr.: Effect of Thrust Reverser Operation on the Lateral-Directional Characteristics of a Three-Surface F-15 Model at Transonic Speeds. NASA TP-2234, December 1983, 89 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
983. Boyden, Richmond P.; Johnson, William G., Jr.; and Ferris, Alice T.: Aerodynamic Force Measurements With a Strain-Gage Balance in a Cryogenic Wind Tunnel. NASA TP-2251, December 1983, 42 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-53)
984. Capone, Francis J.; and Reubush, David E.: Effect of Thrust Vectoring and Wing Maneuver Devices on Transonic Aeropropulsive Characteristics of a Supersonic Fighter Aircraft. NASA TP-2119, February 1983, 86 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)
985. Capone, Francis J.; and Reubush, David E.: Effects of Varying Podded Nacelle-Nozzle Installations on Transonic Aeropropulsive Characteristics of a Supersonic Fighter Aircraft. NASA TP-2120, May 1983, 336 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)
986. Edwards, C. L. W.; and Cole, Stanley R.: Predictions of Entry Heating for Lower Surface of Shuttle Orbiter. NASA TM-84624, July 1983, 96 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-53)
987. Everhart, Joel L.: A Method for Modifying Two-Dimensional Adaptive Wind-Tunnel Walls Including Analytical and Experimental Verification. NASA TP-2081, February 1983, 46 p.  
(Avail: NTIS                      Subject Category 09                      RTOP 505-31-33)
988. Frink, Neal T.: Concept for Designing Vortex Flap Geometries. NASAS TP-2233, December 1983, 21 p.  
(Avail: STIF                      Subject Category 02                      RTOP 505-31-23)
989. Frink, Neal T.; Huffman, Jarrett K.; and Johnson, Thomas D., Jr.: Vortex Flap Flow Reattachment Line and Subsonic Longitudinal Aerodynamic Data on 50° to 74° Delta Wings on Common Fuselage. NASA TM-84618, December 1983, 57 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-23)

990. Jacobs, Peter F.: Aileron Effectiveness for a Subsonic Transport Model With a High-Aspect-Ratio Supercritical Wing. NASA TM-85674, December 1983, 275 p.  
(Avail: IAC Subject Category 02 RTOP 505-31-23)
991. Jenkins, Renaldo V.: Reynolds Number Tests of an NPL 9510 Airfoil in the Langley 0.3-Meter Transonic Cryogenic Tunnel. NASA TM-85663, November 1983, 85 p.  
(Avail: NTIS Subject Category 02 RTOP 534-02-13)
992. Leavitt, Laurence D.: Effect of Empennage Location on Twin-Engine Afterbody/Nozzle Aerodynamic Characteristics at Mach Numbers From 0.6 to 1.2. NASA TP-2116, May 1983, 222 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
993. Leavitt, Laurence D.; and Bare, E. Ann: Effects of Twin-Vertical-Tail Parameters on Twin-Engine Afterbody/Nozzle Aerodynamic Characteristics. NASA TP-2158, May 1983, 104 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
994. Mann, Michael J.; Huffman, Jarrett K.; Fox, Charles H., Jr.; and Campbell, Richard L.: Experimental Study of Wing Leading-Edge Devices for Improved Maneuver Performance of a Supercritical Maneuvering Fighter Configuration. NASA TP-2125, March 1983, 82 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-03)
995. Mason, Mary L.; and Capone, Francis J.: Aeropropulsive Characteristics of Twin Single-Expansion-Ramp Vectoring Nozzles Installed With Forward-Swept Wings and Canards. NASA TP-2133, March 1983, 75 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-09)
996. Melson, N. Duane; and Keller, James D.: Use of CYBER 203 and CYBER 205 Computers for Three-Dimensional Transonic Flow Calculations. NASA TM-84604, April 1983, 15 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-03)
997. Morgan, Harry L., Jr.; and Kjølgaard, Scott O.: Low-Speed Tests of a High-Aspect-Ratio, Supercritical-Wing Transport Model Equipped With a High-Lift Flap System in the Langley 4- by 7-Meter and Ames 12-Foot Pressure Tunnels. NASA TP-2097, July 1983, 275 p.  
(Avail: IAC Subject Category 02 RTOP 534-02-13)
998. Murthy, A. V.; Johnson, Charles B.; Ray, Edward J.; Lawing, Pierce L.; and Thibodeaux, Jerry J.: Studies of Sidewall Boundary Layer in the Langley 0.3-Meter Transonic Cryogenic Tunnel With and Without Suction. NASA TP-2096, March 1983, 48 p.  
(Avail: NTIS Subject Category 34 RTOP 534-02-13)
999. Putnam, Lawrence E.; and Strong, Edward G.: Internal Pressure Distributions for a Two-Dimensional Thrust-Reversing Nozzle Operating at a Free-Stream Mach Number of Zero. NASA TM-85655, December 1983, 43 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-23)

1000. Tuttle, Marie H.; Kilgore, Robert A.; and Boyden, Richmond P.: Magnetic Suspension and Balance Systems - A Selected, Annotated Bibliography. NASA TM-84661, July 1983, 48 p. (Supersedes NASA TM-80225.)  
(Avail: NTIS Subject Category 09 RTOP 505-31-53)

#### Quick-Release Technical Memorandums

1001. Dress, David A.; Johnson, Charles B.; McGuire, Peggy D.; Stanewsky, Egon; and Ray, Edward J.: High Reynolds Number Tests of the CAST 10-2/DOA 2 Airfoil in the Langley 0.3-Meter Transonic Cryogenic Tunnel - Phase I. NASA TM-84620, May 1983, 346 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-53)
1002. Everhart, Joel L.: FLEXWAL: A Computer Program for Predicting the Wall Modifications for Two-Dimensional, Solid, Adaptive-Wall Wind Tunnels. NASA TM-84648, November 1983, 53 p.  
(Avail: IAC Subject Category 02 RTOP 505-31-23)
1003. Harvey, W. D.; Stainback, P. C.; and Owen, F. K.: An Evaluation and Assessment of Flow Quality in Selected NASA Wind Tunnels. NASA TM-85659, August 1983, 45 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-53)
1004. Jenkins, Renaldo V.: Tabulation of Data From Tests of an NPL 9510 Airfoil in the Langley 0.3-Meter Transonic Cryogenic Tunnel. NASA TM-84579, November 1983, 237 p.  
(Avail: NTIS Subject Category 02 RTOP 534-02-13)
1005. Melson, N. Duane; and Streett, Craig L.: TAWFIVE: A Users' Guide. NASA TM-84619, September 1983, 61 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-03)
1006. Morgan, Harry L., Jr.: Computer Programs for Smoothing and Scaling Airfoil Coordinates. NASA TM-84666, July 1983, 186 p.  
(Avail: IAC Subject Category 02 RTOP 505-31-23)
1007. Morgan, Harry L., Jr.: Computer Program for Plotting and Fairing Wind-Tunnel Data. NASA TM-85648, July 1983, 131 p.  
(Avail: IAC Subject Category 02 RTOP 505-31-23)
1008. Springfield, R. Dean; and Lawing, Pierce L.: Flow Rate/Pressure Drop Data Gathered From Testing a Sample of the Space Shuttle Strain Isolation Pad (SIP): Effects of Ambient Pressure Combined With Tension and Compression Conditions. NASA TM-84591, May 1983, 43 p.  
(Avail: NTIS Subject Category 18 RTOP 505-31-53)

#### Contractor Reports

1009. Bangert, L. H.; Krivec, D. K.; and Segall, R. N.: Effects of Nacelle Configuration/Position on Performance of Subsonic Transport. (NAS1-16644 Lockheed-California Company.) NASA CR-3743, November 1983, 202 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-23)



1010. Bauer, F.; Garabedian, P.; and McFadden, G.: The NYU Inverse Swept Wing Code. (NSG-1579 New York University.) NASA CR-3662, January 1983, 104 p.  
(Avail: IAC Subject Category 02 RTOP 505-31-03)
1011. Borland, Christopher J.: Aeroelastic Loads Prediction for an Arrow Wing, Task I - Evaluation of R. P. White's Method. (NAS1-15678 Boeing Commercial Airplane Company.) NASA CR-3640, March 1983, 94 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-43)
1012. Braden, J. A.; Whipkey, R. R.; Jones, G. S.; and Lilley, D. E.: Experimental Study of the Separating Confluent Boundary Layer, Volume I - Summary. (NAS1-16028 Lockheed-Georgia Company.) NASA CR-3655, June 1983, 164 p.  
(Avail: NTIS Subject Category 02 RTOP 534-02-13)
1013. Braden, J. A.; Whipkey, R. R.; Jones, G. S.; and Lilley, D. E.: Experimental Study of the Separating Confluent Boundary-Layer, Volume II - Experimental Data. (NAS1-16028 Lockheed-Georgia Company.) NASA CR-166018, March 1983, 83 p.  
(Avail: NTIS Subject Category 02 RTOP 534-02-13)
1014. Britcher, C. P.: Some Aspects of Wind Tunnel Magnetic Suspension Systems With Special Application at Large Physical Scales. (NSG-7523 University of Southampton.) NASA CR-172154, September 1983, 332 p.  
(Avail: NTIS Subject Category 09 RTOP 505-31-53)
1015. Britcher, C. P.: Performance Measurements of a Pilot Superconducting Solenoid Model Core for a Wind Tunnel Magnetic Suspension and Balance System. (NSG-7523 University of Southampton.) NASA CR-172243, November 1983, 30 p.  
(Avail: NTIS Subject Category 09 RTOP 505-31-53)
1016. Chang, Jen-Fu; and Lan, C. Edward: Design of Wings With Vortex Separated Flow. (NSG-1629 The University of Kansas Center for Research, Inc.) NASA CR-172198, September 1983, 111 p.  
(Avail: STIF Subject Category 02 RTOP 505-31-23)
1017. Chao, Der-Chang; and Lan, C. Edward: Calculation of Wing Response to Gusts and Blast Waves With Vortex Lift Effect. (NAG1-75 The University of Kansas Center for Research, Inc.) NASA CR-172232, October 1983, 65 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-23)
1018. Dotson, Edward H.: Homogeneous Nucleation and Droplet Growth in Nitrogen. (NCC1-44 George Washington University, Joint Institute for Advancement of Flight Sciences.) NASA CR-172206, September 1983, 89 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-53)
1019. Gibson, S. G.: User's Manual for MASTER: Modeling of Aerodynamic Surfaces by Three-Dimensional Explicit Representation. (NAS1-15325 Boeing Commercial Airplane Company.) NASA CR-166056, January 1983, 162 p.  
(Avail: NTIS Subject Category 61 RTOP 505-45-43)

1020. Gibson, S. G.: System Maintenance Manual for MASTER: Modeling of Aerodynamic Surfaces by Three Dimensional Explicit Representation. (NAS1-15325 Boeing Commercial Airplane Company.) NASA CR-172244, April 1983, 124 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-43-23)
1021. Kuhlman, John M.: Longitudinal Aerodynamic Characteristics of a Wing-Winglet Model Designed at  $M = 0.8$ ,  $C_L = 0.4$  Using Linear Aerodynamic Theory. (NSG-1357 Old Dominion University Research Foundation.) NASA CR-172186, July 1983, 232 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-23)
1022. Manro, Marjorie E.: Aeroelastic Loads Prediction for an Arrow-Wing, Task III - Evaluation of Boeing Three-Dimensional Leading-Edge Vortex Code. (NAS1-15678 Boeing Commercial Airplane Company.) NASA CR-3642, April 1983, 218 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-43)
1023. Manro, Marjorie E.; Donahue, Michael J.; Dreisbach, Rodney L.; and Bussoletti, John E.: Specification for a Program for an Iterative Aeroelastic Solution (PIAS). (NAS1-16740 Boeing Commercial Airplane Company.) NASA CR-172200, December 1983, 100 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 743-01-12)
1024. McMahon, H.; Hubbartt, J.; and Kubendran, L. R.: Mean Velocities and Reynolds Stresses Upstream of a Simulated Wing-Fuselage Juncture. (NAG1-40 Georgia Institute of Technology.) NASA CR-3695, June 1983, 170 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-23)
1025. Shiau, Mawshyong Jack; and Lan, C. Edward: A Lifting Surface Theory in Rotational Flow. (NAG1-75 The University of Kansas Center for Research, Inc.) NASA CR-172233, October 1983, 74 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-23)
1026. Shu, Jin-Yea; and Kuhlman, John M.: Calculation of Potential Flow Past Non-Lifting Bodies at Angle of Attack Using Axial and Surface Singularity Methods. (NSG-1357 Old Dominion University.) NASA CR-166058, February 1983, 130 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-09)
1027. Webster, T. J.: Latest Developments in Cryogenic Safety. (L-44921B Applied Cryogenics and Materials Consultants.) NASA CR-166087, March 1983, 14 p.  
(Avail: NTIS                      Subject Category 31                      RTOP 505-31-53)
1028. Wentz, W. H., Jr.; and Ostowari, C.: Additional Flow Field Studies of the GA(W)-1 Airfoil With 30-Percent Chord Fowler Flap Including Slot-Gap Variations and Cove Shape Modifications. (NGR 17-003-021 Wichita State University.) NASA CR-3687, May 1983, 170 p.  
(Avail: IAC                      Subject Category 02                      RTOP 505-31-23)
1029. Wery, Andre C.; and Kulfan, Robert M.: Aeroelastic Loads Prediction for an Arrow Wing, Task II - Evaluation of Semi-Empirical Methods. (NAS1-15678 Boeing Commercial Airplane Company.) NASA CR-3641, March 1983, 124 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-43)

#### Journal Articles and Other Publications

1030. Cline, Michael C.; and Wilmoth, Richard G.: Computation of High Reynolds Number Internal/External Flows. AIAA Journal, Volume 21, February 1983, p. 172-173.  
(Subject Category 34 RTOP 505-04-13)
1031. Green, L. L.; and South, J. C., Jr.: Conservative Full-Potential Calculations for Axisymmetric, Transonic Flow. AIAA Journal, Volume 21, November 1983, p. 1492-1499.  
(Subject Category 02 RTOP 505-31-03)
1032. Hafez, M.; and Lovell, D.: Numerical Solution of Transonic Stream Function Equation. AIAA Journal, Volume 21, March 1983, p. 327-335.  
(Subject Category 02 RTOP 505-31-03)
1033. Kemp, William B., Jr.; and Adcock, Jerry B.: Combined Four-Wall Interference Assessment in Two-Dimensional Airfoil Tests. AIAA Journal, Volume 21, October 1983, p. 1353-1359.  
(Subject Category 02 RTOP 505-31-53)
1034. Putnam, Lawrence E.; and Mace, S. James: Comparison of Subsonic/Transonic Aftbody Flow Prediction Methods. Journal of Aircraft, Volume 20, No. 2, February 1983, p. 146-152.  
(Subject Category 02 RTOP 505-32-13)
1035. Salas, M. D.: Recent Developments in Transonic Euler Flow Over a Circular Cylinder. Mathematics and Computers in Simulation, Volume 25, No. 3, June 1983, p. 232-236.  
(Subject Category 64 RTOP 505-31-03)
1036. Salas, M. D.; and Morgan, B. D.: Stability of Shock Waves Attached to Wedges and Cones. AIAA Journal, Volume 21, No. 12, December 1983, p. 1611-1616.  
(Subject Category 64 RTOP 505-31-03)
1037. Thames, Frank C.: Comment on: Three-Dimensional Body Fitted Coordinates for Turbomachine Applications. Journal of Fluids Engineering, Volume 105, June 1983, p. 243-244.  
(Subject Category 64 RTOP 505-31-03)

#### Meeting Presentations

1038. Adcock, J. B.; and Barnwell, R. W.: Effect of Boundary-Layers on Solid Walls in Three-Dimensional Subsonic Wind Tunnels. Presented at the NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop, January 25-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 09 RTOP 505-31-63)

1039. Adcock, Jerry B.; and Barnwell, Richard W.: Effect of Boundary Layers on Solid Walls in Three-Dimensional Subsonic Wind Tunnels. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0144.  
(Subject Category 09 RTOP 505-31-63)
1040. Berrier, Bobby L.: Empennage/Afterbody Integration for Single and Twin-Engine Fighter Aircraft. Presented at the AIAA/ASME/SAE 19th Joint Propulsion Conference, June 27-29, 1983, Seattle, Washington. AIAA Paper No. 83-1126.  
(Subject Category 02 RTOP 505-43-23)
1041. Berrier, Bobby L.; and Mason, Mary L.: A Static Investigation of Yaw Vectoring Concepts on Two-Dimensional Convergent-Divergent Nozzles. Presented at the AIAA/ASME/SAE 19th Joint Propulsion Conference, June 27-29, 1983, Seattle, Washington. AIAA Paper No. 83-1288.  
(Subject Category 02 RTOP 505-43-23)
1042. Bobbitt, Percy J.: NASA Langley Transonic Launch Dynamics Plans and Capabilities. Presented at the National Aeronautical Establishment TTCP-W2 Workshop Store Carriage and Release, October 18-19, 1983, Ottawa, Canada.  
(Subject Category 02 RTOP 505-31-53)
1043. Capone, Francis J.; Mason, Mary L.; and Carson, George T., Jr.: Thrust Reversing Effects on Horizontal Tail Effectiveness of Twin-Engine Fighter Aircraft. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0086.  
(Subject Category 34 RTOP 505-32-13)
1044. Compton, William B., III; and Whitesides, John L.: Three-Dimensional Euler Solutions for Long-Duct Nacelles. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno Nevada. AIAA Paper No. 83-0089.  
(Subject Category 02 RTOP 505-31-43)
1045. Dagenhart, J. Ray; and Saric, William S.: An Orthogonal Coordinate Grid Following the Three-Dimensional Viscous Flow Over a Concave Surface. Presented at the ASME Fluids Engineering Conference, Mini-Symposium on Advances in Grid Generation, June 20-22, 1983, Houston, Texas.  
(Subject Category 64 RTOP 505-31-33)
1046. Dusa, D. J.; Speir, D. W.; Rowe, R. K.; and Leavitt, L. D.: Advanced Technology Exhaust Nozzle Development. Presented at the AIAA/ASME/SAE 19th Joint Propulsion Conference, June 27-29, 1983, Seattle, Washington. AIAA Paper No. 83-1286.  
(Subject Category 02 RTOP 505-43-23)
1047. Edwards, C. L. W.; Bobbitt, P. J.; and Monta, W. J.: Supersonic Loads Due to Shuttle-Orbiter/External-Tank Attachment Structures. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 02 RTOP 505-31-53)

1048. Gloss, Blair B.; and Sewall, William G.: Support-Sting Interference on Boattail Pressure Drag for Reynolds Numbers Up to  $70 \times 10^6$ . Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno Nevada. AIAA Paper No. 83-0387.  
(Subject Category 02 RTOP 505-31-63)
1049. Gumbert, C. R.; Newman, P. A.; Kemp, W. B., Jr.; and Adcock, J. B.: Adaptation of a Four-Wall Interference Assessment/Correction Procedure for Airfoil Tests in the 0.3-M TCT. Presented at the NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop, January 25-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 09 RTOP 505-31-53)
1050. Hafez, M.; and Lovell, D.: Entropy and Vorticity Corrections to Transonic Flows. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1919-CP.  
(Subject Category 02 RTOP 505-31-03)
1051. Hafez, M.; and Lovell, D.: Transonic Small Disturbance Calculations Including Entropy Corrections. Presented at the California State University at Long Beach, Second Symposium on Numerical and Physical Aspects of Aerodynamic Flows, January 17-20, 1983, Long Beach, California. Proceedings Pending.  
(Subject Category 02 RTOP 505-31-03)
1052. Hafez, Mohamed; and Lovell, Donald R.: Improved Relaxation Schemes for Transonic Potential Calculations. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0372.  
(Subject Category 02 RTOP 505-31-03)
1053. Henderson, William P.; and Patterson, James C.: Propulsion Installation Characteristics for Turbofan Transports. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0087.  
(Subject Category 02 RTOP 505-31-43)
1054. Hussaini, M. Y.; Kopriva, D. A.; Salas, M. D.; and Zang, T. A.: Spectral Methods for Euler Equations. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1942-CP.  
(Subject Category 02 RTOP 505-31-03)
1055. Jacobs, Peter F.: A Comparison of Trim Drag for Conventional and Supercritical Wings. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0094.  
(Subject Category 02 RTOP 505-31-43)
1056. Jenkins, R. V.: Some Experience With Barnwell-Sewall Type Correction to Two-Dimensional Airfoil Data. Presented at the NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop, January 25-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 09 RTOP 505-31-53)

1057. Lamar, John E.; and Campbell, James F.: Recent Studies at NASA-Langley of Vortical Flows Interacting With Neighboring Surfaces. Presented at the AGARD Fluid Dynamics Panel Symposium on Aerodynamics of Vortical Type Flows in Three Dimensions, April 25-27, 1983, Rotterdam, Netherlands.  
(Subject Category 02 RTOP 505-31-23)
1058. Leavitt, Laurence D.: Effects of Various Empennage Parameters on the Aerodynamic Characteristics of a Twin-Engine Afterbody Body. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0085.  
(Subject Category 02 RTOP 505-43-23)
1059. Mann, Michael J.; Campbell, Richard L.; and Ferris, James C.: Aerodynamic Design for Improved Maneuverability by the Use of Three-Dimensional Transonic Theory. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1859.  
(Subject Category 02 RTOP 505-43-23)
1060. McCarthy, D. R.; and Swanson, R. C.: Embedded Mesh Multigrid Treatment of Two-Dimensional Transonic Flows. Presented at the Colorado State University, AFOSR/NASA International Multigrid Conference, April 6-8, 1983, Copper Mountain, Colorado.  
(Subject Category 64 RTOP 505-31-03)
1061. McKinney, L. W.: Operational Experience With the National Transonic Facility. Presented at the AGARD Fluid Dynamics Panel Symposium on Wind Tunnels and Testing Techniques, September 26-29, 1983, Cesme, Izmir, Turkey. AGARD Paper No. 1. Proceedings Pending.  
(Subject Category 09 RTOP 534-02-13)
1062. Melson, N. Duane; and Keller, James D.: Experiences in Using the CYBER 203 and CYBER 205 for Three-Dimensional Transonic Flow Calculations. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0500.  
(Subject Category 02 RTOP 505-31-13)
1063. Murthy, A. V.; Johnson, C. B.; Ray, E. J.; Lawing, P. L.; and Thibodeaux, J. J.: Investigation of the Effects of Upstream Sidewall Boundary-Layer Removal on a Supercritical Airfoil. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0386.  
(Subject Category 09 RTOP 505-31-53)
1064. Murthy, A. V.; Johnson, C. B.; Ray, E. J.; Lawing, P. L.; and Thibodeaux, J. J.: Effect of Upstream Sidewall Boundary-Layer Removal on an Airfoil Test. Presented at the NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop, January 25-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 09 RTOP 505-31-53)

1065. Owen, F. K.; Stainback, P. C.; and Harvey, W. D.: An Evaluation of Factors Affecting the Flow Quality in Wind Tunnels. Presented at the AGARD Fluid Dynamics Panel Symposium on Wind Tunnels and Testing Techniques, September 26-28, 1983, Cesme, Izmir, Turkey. AGARD Paper No. 12. Proceedings Pending.  
(Subject Category 09 RTOP 505-31-53)
1066. Polhamus, Edward C.: Application of Slender Wing Benefits to Military Aircraft. Presented at the AIAA/AHS 1983 Aircraft Design, Systems, and Operations Meeting and Technical Display, October 17-19, 1983, Fort Worth, Texas. AIAA Paper No. 83-2566.  
(Subject Category 02 RTOP 505-43-23)
1067. Putnam, Lawrence E.; and Hodges, John: Assessment of NASA and RAE Viscous-Inviscid Interaction Methods for Predicting Transonic Flow Over Nozzle Afterbodies. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1789.  
(Subject Category 02 RTOP 505-31-23)
1068. Ray, E. J.; and Ladson, C. L.: Review of the Advanced Technology Airfoil Test (ATAT) Program in the 0.3-M TCT. Presented at the NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop, January 25-26, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 09 RTOP 505-31-53)
1069. Richey, G. K.; Surber, L. E.; and Berrier, B. L.: Airframe Propulsion Integration for Fighter Aircraft. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0084.  
(Subject Category 02 RTOP 505-31-23)
1070. Salas, M. D.; Jameson, A.; and Melnik, R. E.: A Comparative Study of the Nonuniqueness Problem of the Potential Equation. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-14, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1888-CP.  
(Subject Category 64 RTOP 505-31-03)
1071. South, Jerry C., Jr.; and Hafez, Mohamed M.: Stability Analysis of Intermediate Boundary Conditions in Approximate Factorization Schemes. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1898-CP.  
(Subject Category 64 RTOP 505-31-03)
1072. Stainback, P. Calvin; Johnson, Charles B.; and Basnett, Constance B.: Preliminary Measurements of Velocity, Density and Total Temperature Fluctuations in Compressible Subsonic Flow. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0384.  
(Subject Category 14 RTOP 505-31-53)

1073. Stanewsky, E.; Demurie, R.; Ray, E. J.; and Johnson, C. B.: High Reynolds Number Tests of the CAST 10-2/DOA2 Transonic Airfoil at Ambient and Cryogenic Temperature Conditions. Presented at the AGARD Fluid Dynamics Panel Symposium on Wind Tunnels and Testing Techniques, September 26-29, 1983, Cesme, Izmir, Turkey. AGARD Paper No. 10. Proceedings Pending.  
(Subject Category 02 RTOP 534-02-13)
1074. Streett, C. L.: A Spectral Method for the Solution of Transonic Potential Flow About an Arbitrary Two-Dimensional Airfoil. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1949-CP.  
(Subject Category 64 RTOP 505-31-03)
1075. Streett, Craig L.; Zang, Thomas A.; and Hussaini, M. Yousuff: Spectral Multigrid Methods With Applications to Transonic Potential Flow. Presented at the Colorado State University, AFOSR/NASA International Multigrid Conference, April 6-8, 1983, Copper Mountain, Colorado.  
(Subject Category 64 RTOP 505-31-03)
1076. Swanson, R. C.; Rubin, S. G.; and Khosla, P. K.: Calculation of Afterbody Flows With a Composite Velocity Formulation. Presented at the AIAA 16th Fluid and Plasma Dynamics Conference, July 12-14, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1736.  
(Subject Category 02 RTOP 505-43-23)
1077. Thames, Frank C.: Multigrid Applications to Three-Dimensional Elliptic Coordinate Generation. Presented at the Colorado State University, AFOSR/NASA International Multigrid Conference, April 6-8, 1983, Copper Mountain, Colorado.  
(Subject Category 64 RTOP 505-31-03)
1078. Waggoner, Edgar G.: Computational Analysis for an Advanced Transport Configuration With Engine Nacelles. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1851.  
(Subject Category 02 RTOP 505-31-03)
1079. Wedan, Bruce; and South, Jerry C., Jr.: A Method for Solving the Transonic Full-Potential Equation for General Configurations. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1889-CP.  
(Subject Category 02 RTOP 505-31-03)
1080. Whitcomb, R. T.: Several Examples of Empirical Configuration Development. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1803.  
(Subject Category 02 RTOP 505-31-23)
1081. Wornom, Stephen F.: Implicit Conservative Characteristic Modeling Schemes for Euler Equations - A New Approach. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1939-CP.  
(Subject Category 64 RTOP 505-31-03)



### Technical Talks

- 1082. Adcock, J. B.: Wall Interference Experiment. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1083. Barnwell, R. W.: NTF Validation Program. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1084. Bruce, W. E.: Operational Experience. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1085. Campbell, J. F.: Aerodynamics for Highly Maneuvering Aircraft. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1086. Fuller, D. E.: Steady State Calibration. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1087. Gloss, B. B.: Transport Aerodynamics. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1088. Kilgore, R. A.: Cryogenic Wind Tunnel Testing - Past, Present, Future. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09      RTOP 505-31-53)
- 1089. Kilgore, Robert A.: Cryogenic Wind Tunnels - An Overview of Their Development and Application at the NASA Langley Research Center. Presented at the DFVLR - Center Porz-Wahn, August 15, 1983, Koeln, West Germany.  
(Subject Category 09      RTOP 505-31-53)
- 1090. Kilgore, Robert A.; Dress, David A.; and McGuire, Peggy D.: Cryogenic Wind Tunnels for High Reynolds Number Testing. Presented at the University of Tennessee Space Institute Short Course on Aerospace Ground Test Facilities and Flight Testing, April 26, 1983, Tullahoma, Tennessee.  
(Subject Category 09      RTOP 505-31-53)
- 1091. McKinney, L. Wayne: The National Transonic Facility. Presented at the AIAA Tenth Annual General Aviation Technologyfest, November 4-5, 1983, Wichita, Kansas.  
(Subject Category 09      RTOP 505-31-53)
- 1092. Melson, N. Duane: Input for the TAWFIVE Code - Control Parameters. Presented at the TAWFIVE Workshop, October 20, 1983, Hampton, Virginia.  
(Subject Category 64      RTOP 505-31-03)

1093. Melson, N. Duane: Input for the TAWFIVE Code - Geometry. Presented at the TAWFIVE Workshop, October 20, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)
1094. Melson, N. Duane; and Streett, Craig L.: Running Strategies for the TAWFIVE Code and Questions. Presented at the TAWFIVE Workshop, October 20, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)
1095. Newman, P. A.: Wall Interference Theories. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)
1096. Peterson, J. B.: Initial Basic Fluid Experiments in NTF. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)
1097. Salas, M. D.: On the Nonuniqueness Problem of the Potential Equation. Presented at the NASA Workshop on Transonic Unsteady Aerodynamics and Aeroelasticity, June 22-23, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)
1098. Somers, Dan M.: How to Pick the Right Airfoil. Presented at the 1983 Annual Convention of the Experimental Aircraft Association, July 30 - August 6, 1983, Oshkosh, Wisconsin.  
(Subject Category 02 RTOP 505-31-23)
1099. South, Jerry C., Jr.: Numerical Simulation of Transonic Flow. Presented at the SIAM 1983 Fall Meeting, Symposium on Computational Aerodynamics, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 64 RTOP 505-31-03)
1100. South, Jerry C., Jr.; and Hafez, Mohamed M.: Stability Analysis of Intermediate Boundary Conditions in Approximate Factorization Schemes. Presented at the NASA Workshop on Transonic Unsteady Aerodynamics and Aeroelasticity, June 22-23, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)
1101. Stainback, P. C.: Dynamic Calibration. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)
1102. Streett, Craig L.: Engineering Aspects of the TAWFIVE Code. Presented at the TAWFIVE Workshop, October 20, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)
1103. Thames, Frank C.: Elliptic Grid Generation and Experiences With the Brackbill-Saltzman Method. Presented at the ICASE Workshop on Grid Methods, September 26-27, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)

1104. Waggoner, E. G.: Complementary Computational-Aerodynamics Research. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)
1105. Wedan, B.; and South, J. C., Jr.: Cartesian Grid Methods for Compressible Fluids. Presented at the ICASE Workshop on Grid Methods, September 26-27, 1983, Hampton, Virginia.  
(Subject Category 64 RTOP 505-31-03)

#### Computer Programs

1106. Morgan, Harry L., Jr.: AFSMO and AFSCS: Airfoil Smoothing and Scaling Programs. Program No. LAR-13132. Submitted 1983.  
(Subject Category 02)

#### Tech Briefs

1107. Gallimore, Frank H. (McDonnell Douglas Corporation): Silicone Rubber Tooling for Hollow Panels. NASA Tech Brief LAR-12974.
1108. Harvey, William D. (Langley Research Center); and Sivaramakrishnan, M. Mangalam (National Academy of Sciences): Retractable Endplates. NASA Tech Brief LAR-12946/12947.
1109. Ku, T. J.; and Kuhlman, J. M. (Old Dominion University Research Foundation): Minimum Induced Drag of Nonplanar Wings. NASA Tech Brief LAR-12925.
1110. Lan, C. E.; and Chang, J-F. (University of Kansas Center for Research, Inc.): Calculating the Vortex-Lift Effect of Cambered Wings. NASA Tech Brief LAR-12985.
1111. Patterson, James C., Jr.: Wing Tip Vortex Augmented Turbo Pusher Propeller Thrust. NASA Tech Brief LAR-13019.
1112. Stainback, P. Calvin: Constant Operating Resistance Hot Wire Probe. NASA Tech Brief LAR-13144.
1113. Stainback, P. Calvin; and Johnson, Charles B. (Langley Research Center); and Basnett, Constance B. (SDC): Measurement of Velocity, Density and Total Temperature Fluctuations in Compressible Subsonic Flow. NASA Tech Brief LAR-13051.
1114. Thomas, P. D. (Lockheed Missiles & Space Company, Inc.): Flow Over Nonaxisymmetric Nozzles. NASA Tech Brief LAR-12962.

# Patents

- 1115. Maestrello, Lucio: Apparatus and Method for Jet Noise Suppression. U.S. Patent 4,398,667. Issued August 16, 1983.  
(Subject Category 71)
- 1116. \*Noonan, Kevin W.: Family of Airfoil Shapes for Rotating Blades. U.S. Patent 4,412,664. Issued November 1, 1983.  
(Subject Category 02)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

# PUBLICATIONS FOR HIGH-SPEED AERODYNAMICS DIVISION

## Formal Reports

1117. Allen, Jerry M.; Hernandez, Gloria; and Lamb, Milton: Body-Surface Pressure Data on Two Monoplane-Wing Missile Configurations With Elliptical Cross Sections at Mach 2.50. NASA TM-85645, September 1983, 156 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
1118. Beach, H. Lee, Jr.; Mackley, Ernest A.; and Guy, R. Wayne: Mach 7 Tests of Langley Airframe-Integrated Scramjet. NASA TM-84595, June 1983, 29 p.  
(Avail: STIF                      Subject Category 07                      RTOP 505-43-83)
1119. Beckwith, Ivan E.; Creel, Theodore R., Jr.; Chen, Fang-Jenq; and Kendall, James M.: Free-Stream Noise and Transition Measurements on a Cone in a Mach 3.5 Pilot Low-Disturbance Tunnel. NASA TP-2180, September 1983, 68 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-13)
1120. Blair, A. B., Jr.; Allen, Jerry M.; and Hernandez, Gloria: Effect of Tail-Fin Span on Stability and Control Characteristics of a Canard-Controlled Missile at Supersonic Mach Numbers. NASA TP-2157, June 1983, 84 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
1121. Blair, A. B., Jr.; Lamb, Milton; and Shaw, David S.: Supersonic Aerodynamic Characteristics of a Wind-Tunnel Model That Simulated a Twin-Inlet Interceptor-Type Airplane. NASA TM-84622, May 1983, 100 p.  
(Avail: STIF                      Subject Category 02                      RTOP 505-43-23)
1122. Covell, Peter F.: Interference Effects of Aft Reaction-Control Yaw Jets on the Aerodynamic Characteristics of a Space Shuttle Orbiter Model at Supersonic Speeds. NASA TM-84645, June 1983, 45 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-33)
1123. Gatski, T. B.: The Disturbance Flow Field Produced by an Evolving Vortex. NASA TP-2245, December 1983, 34 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-13)
1124. Guy, Robert W.; Torrence, Marvin G.; Mueller, James N.; and Sabol, Alexander P.: Initial Ground-Facility Tests at Mach 7 of a Hydrogen-Burning, Airframe-Integrated, Scramjet-Engine Model. NASA TM-84644, December 1983, 96 p.  
(Avail: STIF                      Subject Category 07                      RTOP 505-32-73)
1125. Hayes, Clyde: Aerodynamic Characteristics of a Series of Single-Inlet Air-Breathing Missile Configurations. NASA TM-84557, March 1983, 361 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
1126. Hayes, Clyde: Aerodynamic Characteristics of a Series of Twin-Inlet Air-Breathing Missile Configurations. I - Axisymmetric Inlets at Supersonic Speeds. NASA TM-84558, March 1983, 277 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)

1127. Hayes, Clyde: Aerodynamic Characteristics of a Series of Twin-Inlet Air-Breathing Missile Configurations. II - Two-Dimensional Inlets at Supersonic Speeds. NASA TM-84559, March 1983, 393 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
1128. Hayes, Clyde: Aerodynamic Characteristics of a Series of Twin-Inlet Air-Breathing Missile Configurations. III - Axisymmetric and Two-Dimensional Inlets at Subsonic-Transonic Speeds. NASA TM-84560, March 1983, 359 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
1129. Jachimowski, Casimir J.; and McLain, Allen G.: A Chemical Kinetic Mechanism for the Ignition of Silane/Hydrogen Mixtures. NASA TP-2129, February 1983, 18 p.  
(Avail: NTIS Subject Category 25 RTOP 505-32-73)
1130. Mack, Robert J.: Wind-Tunnel Investigation of Leading-Edge Thrust on Arrow Wings in Supersonic Flow. NASA TP-2167, August 1983, 78 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-73)
1131. McLain, Allen G.; Jachimowski, Casimir J.; and Rogers, R. Clayton: Ignition of  $\text{SiH}_4\text{-H}_2\text{-O}_2\text{-N}_2$  Behind Reflected Shock Waves. NASA TP-2114, February 1983, 15 p.  
(Avail: NTIS Subject Category 07 RTOP 505-43-83)
1132. Penland, Jim A.; Marcum, Don C., Jr.; and Stack, Sharon H.: Wall-Temperature Effects on the Aerodynamics of a Hydrogen-Fueled Transport Concept in Mach 8 Blowdown and Shock Tunnels. NASA TP-2159, July 1983, 59 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-72)
1133. Riebe, Gregory D.: Aerodynamic Characteristics, Including Effect of Body Shape, of a Mach 6 Aircraft Concept. NASA TP-2235, December 1983, 30 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
1134. Shrout, Barrett L.; and Covell, Peter F.: Aerodynamic Characteristics of a Series of Bodies With Variations in Nose Camber. NASA TP-2206, September 1983, 53 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
1135. Thomas, Scott R.; and Guy, Robert W.: Expanded Operational Capabilities of the Langley Mach 7 Scramjet Test Facility. NASA TP-2186, October 1983, 72 p.  
(Avail: NTIS Subject Category 09 RTOP 505-43-83)
1136. Wood, Richard M.; and Miller, David S.: Experimental Investigation of Leading-Edge Thrust at Supersonic Speeds. NASA TP-2204, September 1983, 50 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)
1137. Wood, Richard M.; Miller, David S.; and Brentner, Kenneth S.: Theoretical and Experimental Investigation of Supersonic Aerodynamic Characteristics of a Twin-Fuselage Concept. NASA TP-2184, August 1983, 37 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-23)

## Quick-Release Technical Memorandums

No quick-release technical memorandums.

### Contractor Reports

1138. Baker, A. J.; and Orzechowski, J. A.: Progress on a Generalized Coordinates Tensor Product Finite Element 3DPNS Algorithm for Subsonic Flow. (NAS1-15105 Computational Mechanics Consultants, Inc.) NASA CR-172256, December 1983, 38 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-03)
1139. Balasubramanian, R.; and Orszag, S. A.: Numerical Studies of Laminar and Turbulent Drag Reduction - Part II. (NAS1-16722 Cambridge Hydrodynamics, Inc.) NASA CR-3669, January 1983, 90 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-23)
1140. Carlson, Charles H.: Preliminary Scramjet Design for Hypersonic Airbreathing Missile Application. (NAS1-15434 The Marquardt Company.) NASA CR-3742, November 1983, 68 p.  
(Avail: NTIS                      Subject Category 07                      RTOP 530-03-13)
1141. Carlson, Harry W.; and Walkley, Kenneth B.: An Aerodynamic Analysis Computer Program and Design Notes for Low-Speed Wing Flap Systems. (NAS1-16000 Kentron International, Inc.) NASA CR-3675, March 1983, 72 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-43-23)
1142. Clever, W. C.; and Shankar, V.: Nonlinear Potential Analysis Techniques for Supersonic/Hypersonic Configuration Design. (NAS1-15820 Rockwell International Corporation.) NASA CR-166078, March 1983, 86 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-73)
1143. Hall, Jon F.; Neuhart, Dan H.; and Walkley, Kenneth B.: An Interactive Graphics Program for Manipulation and Display of Panel Method Geometry. (NAS1-16000 Kentron International, Inc.) NASA CR-166098, March 1983, 44 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
1144. Lustman, Liviu R.: Spectral Methods for Two-Dimensional Shocks. (NAS1-16572 Systems and Applied Sciences Corporation.) NASA CR-166119, March 1983, 31 p.  
(Avail: STIF                      Subject Category 34                      RTOP 505-31-03)
1145. Mason, William H.: A Wing Concept for Supersonic Maneuvering. (NAS1-15357 Grumman Aerospace Corporation.) NASA CR-3763, December 1983, 82 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)
1146. Mason, William H.; and Rosen, Bruce S.: The COREL and W12SC3 Computer Programs for Supersonic Wing Design and Analysis. (NAS1-15357 Grumman Aerospace Corporation.) NASA CR-3676, December 1983, 189 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)

1147. Moitra, Anutosh: Quasi-Three-Dimensional Grid Systems for High-Speed Blended-Wing Configurations and Numerical Simulation of the Euler Equations. (NAS1-16572 Systems and Applied Sciences Corporation.) NASA CR-166120, March 1983, 27 p.  
(Avail: STIF                      Subject Category 34                      RTOP 505-31-03)
1148. Moretti, Gino; and DiPiano, Michael T.: An Improved Lambda-Scheme for One-Dimensional Flows. (NAS1-16946 G.M.A.F., Inc.) NASA CR-3712, September 1983, 74 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-31-03)
1149. Rao, D. M.; and Mehrotra, S. C.: Flat-Plate Drag Measurements With Vortex Generators in Turbulent Boundary Layer. (NAS1-16283 Vigyan Research Associates, Inc.) NASA CR-172125, June 1983, 19 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-13)
1150. Rathjen, Kenneth A.; and Burk, Henry O.: Enhancement of the CAVE Computer Code. (NAS1-15367 Grumman Aerospace Corporation.) NASA CR-3731, December 1983, 85 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-11-33)
1151. Siclari, Michael J.: The NCOREL Computer Program for 3D Nonlinear Supersonic Potential Flow Computations. (NAS1-16758 Grumman Aerospace Corporation.) NASA CR-3694, August 1983, 170 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-23)

#### Journal Articles and Other Publications

1152. Antcliff, Richard R.; and Jarrett, Olin, Jr.: Coherent Anti-Stokes Raman Scattering With Reflective Optics. Applied Optics, Volume 22, July 1, 1983, p. 1954-1955.  
(Subject Category 74                      RTOP 505-43-83)
1153. Berman, Harry A.; Anderson, John D., Jr.; and Drummond, J. Phillip: Supersonic Flow Over a Rearward Facing Step With Transverse NonReacting Hydrogen Injection. AIAA Journal, Volume 21, No. 12, December 1983, p. 1707-1713.  
(Subject Category 34                      RTOP 505-43-83)
1154. Carlson, Harry W.; and Miller, David S.: The Influence of Leading-Edge Thrust on Twisted and Cambered Wing Design for Supersonic Cruise. Journal of Aircraft, Volume 20, No. 5, May 1983, p. 440-445.  
(Subject Category 02                      RTOP 505-31-43)
1155. Dillenius, M. F. E.; Hensch, M. J.; Sawyer, W. C.; Allen, J. M.; and Blair, A. B., Jr.: Comprehensive Missile Aerodynamics Programs for Preliminary Design. Journal of Spacecraft and Rockets, Volume 20, No. 4, July-August 1983, p. 414-416.  
(Subject Category 02                      RTOP 505-43-23)



1156. Dwoyer, Douglas L.; Newman, Perry A.; Thames, Frank C.; and Melson, N. Duane.: Tile-Gap in the Shuttle Orbiter Thermal Protection System. Progress in Astronautics and Aeronautics, Volume 85, 1983, p. 271-299.  
(Subject Category 34 RTOP 505-31-13)
1157. Pittman, J. L.: Preliminary Supersonic Analysis Methods Including High Angle of Attack. Journal of Aircraft, Volume 20, No. 9, September 1983, p. 784-790.  
(Subject Category 02 RTOP 505-43-23)
1158. Rogers, R. C.; and Chinitz, W.: Using a Global Hydrogen-Air Combustion Model in Turbulent Reacting Flow Calculations. AIAA Journal, Volume 21, No. 4, April 1983, p. 586-592.  
(Subject Category 25 RTOP 505-32-93)
1159. Stallings, Robert L., Jr.: Store Separation From Cavities at Supersonic Flight Speeds. Journal of Spacecraft and Rockets, Volume 20, No. 2, March-April 1983, p. 129-132.  
(Subject Category 02 RTOP 505-43-23)
1160. Walsh, Michael J.: Riblets as a Viscous Drag Reduction Technique. AIAA Journal, Volume 21, No. 4, April 1983, p. 485-486.  
(Subject Category 34 RTOP 505-31-23)

#### Meeting Presentations

1161. Abarbanel, Saul S.; Dwoyer, Douglas L.; and Gottlieb, David: Improving the Convergence Rate of Parabolic ADI Methods. Presented at the AIAA 6th Computational Fluid Dynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1897-CP.  
(Subject Category 02 RTOP 505-31-03)
1162. Allen, Jerry M.; and Pittman, Jimmy L.: Analysis of Surface Pressure Distributions on Two Elliptic Missile Configurations. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1841.  
(Subject Category 02 RTOP 505-43-23)
1163. Anders, J. B.; Hefner, J. N.; and Bushnell, D. M.: Turbulent Skin Friction Reduction Using Large-Eddy Breakup Devices. Presented at the Thirty-Sixth Meeting of the American Physical Society, Division of Fluid Dynamics, November 20-22, 1983, Houston, Texas. Abstract Published in Bulletin of the American Physical Society, Volume 28, No. 9, p. 1386.  
(Subject Category 34 RTOP 505-31-13)
1164. Anderson, Griffin Y.; and Mackley, Ernest A.: Mach 7 Performance of the Langley Airframe-Integrated Modular Scramjet. Presented at the 1983 JANNAF Propulsion Meeting, February 14-18, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 07 RTOP 505-32-73)

1165. Antcliff, Richard R.; and Jarrett, Olin, Jr.: Comparison of CARS Combustion Temperatures With Standard Techniques. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1482.  
(Subject Category 25      RTOP 505-32-83)
1166. Beckwith, Ivan E.; Creel, Theodore R., Jr.; Chen, Fang-Jenq; Kendall, James M.: Free Stream Noise and Transition Measurements in a Mach 3.5 Pilot Quiet Tunnel. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0042  
(Subject Category 34      RTOP 505-31-23)
1167. Bushnell, Dennis M.: Turbulent Drag Reduction for External Flows. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0227  
(Subject Category 34      RTOP 505-31-23)
1168. Creel, Theodore R., Jr.: Operating Experience With the Supersonic Pilot Quiet Tunnel. Presented at the 60th Semi-Annual Meeting of the Supersonic Tunnel Association, October 6-7, 1983, Williamsburg, Virginia.  
(Subject Category 34      RTOP 505-31-13)
1169. Drummond, J. Philip: Numerical Study of a Ramjet Dump Combustor Flow Field. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0421.  
(Subject Category 34      RTOP 505-32-73)
1170. Dwoyer, Douglas L.; Walters, Robert W.; Abarbanel, Saul S.; and Gottlieb, David: Implicit Finite-Difference Methods for Compressible Flow Computations. Presented at the AMS 1983 Summer Seminar on Large-Scale Computations in Fluid Mechanics, June 27 - July 1, 1983, LaJolla, California. Proceedings Pending.  
(Subject Category 02      RTOP 505-31-02)
1171. Hefner, J. N.; Bushnell, D. M.; and Walsh, M. J.: Research on Non-Planar Wall Geometries for Turbulence Control and Skin-Friction Reduction. Presented at the 1983 U.S. Air Force-DFVLR Data Exchange Meeting, "Viscous and Interacting Flow Field Effects", May 25-26, 1983, Gottingen, West Germany.  
(Subject Category 34      RTOP 505-31-13)
1172. Hefner, Jerry N.; Anders, John B.; and Bushnell, Dennis M.: Alteration of Outer Flow Structures for Turbulent Drag Reduction. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0293.  
(Subject Category 34      RTOP 505-31-23)
1173. Hom, K. A.; Morris, O. A.; and Hahne, D. E.: Low-Speed Investigation of the Maneuver Capability of Supersonic Fighter Wings. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0426.  
(Subject Category 02      RTOP 505-43-23)

1174. Howard, F. G.; Goodman, W. L.; and Walsh, M. J.: Axisymmetric Bluff-Body Drag Reduction Using Circumferential Grooves. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1788.  
(Subject Category 34 RTOP 505-31-13)
1175. Hunt, James L.; Jachimowski, Casimir J.; Jackson, L. Robert; and Carlson, Charles H.: Design and Performance Sensitivities of a Dual-Mode Scramjet Missile With Otto Fuel, Silane and RJ-5 Pilots. Presented at the 1983 JANNAF Propulsion Meeting, February 14-18, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 02 RTOP 505-43-23)
1176. Hunt, J. L.; Johnston, P. J.; and Riebe, G. D.: Flow Fields and Aerodynamic Characteristics for Hypersonic Missiles With Mid-Fuselage Inlets. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0542.  
(Subject Category 02 RTOP 505-43-23)
1177. Jones, Kenneth M.: Application of a Full Potential Method for Predicting Supersonic Flow Fields and Aerodynamic Characteristics. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1802.  
(Subject Category 02 RTOP 505-31-23)
1178. Keyes, J. Wayne: High Pressure Ratio Nozzle Static Test Apparatus. Presented at the Supersonic Tunnel Association 59th Semi-Annual Meeting, April 6-7, 1983, Colorado Springs, Colorado.  
(Subject Category 09 RTOP 505-43-83)
1179. Kopriva, David A.; Zang, T. A.; Salas, M. D.; and Hussaini, M. Yousuff: Filtering Strategies for Pseudospectral Solutions of 2D Gas-Dynamic Problems. Presented at the Fifth GAMM Conference on Numerical Methods in Fluid Mechanics, October 5-7, 1983, Rome, Italy. Proceedings Pending.  
(Subject Category 64 RTOP 505-31-03)
1180. Korn, S. C.; Dyer, R. D.; Mathews, C. B.; Sawyer, W. C.; and Mathews, R. K.: Implications of Sustained Supersonic Cruise on Weapon Carriage and Separation. Presented at the AGARD Flight Mechanics Panel Symposium on Technology for Sustained Supersonic Cruise and Maneuver, October 10-14, 1983, Brussels, Belgium. AGARD CP-358.  
(Subject Category 02 RTOP 505-43-23)
1181. Kumar, Ajay: Numerical Analysis of a Scramjet Inlet Flow Field Using the Three-Dimensional Navier-Stokes Equations. Presented at the 1983 JANNAF Propulsion Meeting, February 14-18, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 34 RTOP 505-43-83)
1182. Kumar, Ajay; and Drummond, J. Philip: Numerical Study of Scramjet and Ramjet Flow Fields. Presented at the 1983 JANNAF Propulsion Meeting, February 14-18, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 02 RTOP 505-32-73)

1183. Lin, J. C.; Walsh, M. J.; Watson, R. D.; and Balasubramanian, R.: Turbulent Drag Characteristic of Small Amplitude Rigid Surface Waves. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0228.  
(Subject Category 34 RTOP 505-31-23)
1184. Malik, M. R.; Weinstein, L. M.; and Hussaini, M. Y.: Ion Wind Drag Reduction. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0231.  
(Subject Category 34 RTOP 505-31-23)
1185. Mason, W. H.; Siclari, M. J.; Miller, D. S.; and Pittman, J. L.: A Supersonic Maneuver Wing Designed for Nonlinear Attached Flow. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0425.  
(Subject Category 02 RTOP 505-43-23)
1186. McClinton, Charles R.; and Jakubowski, A. K.: Parametric Investigation of Hydrogen Fueled Scramjet Flameholding. Presented at the Twentieth JANNAF Combustion Meeting, October 17-21, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 07 RTOP 505-43-83)
1187. Miller, David S.; Pittman, Jimmy L.; and Wood, Richard M.: An Overview of Two Nonlinear Supersonic Wing Design Studies. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0182.  
(Subject Category 02 RTOP 505-43-23)
1188. Miller, David S.; and Wood, Richard M.: An Investigation of Wing Leading-Edge Vortices at Supersonic Speeds. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1816.  
(Subject Category 02 RTOP 505-43-23)
1189. Pellett, G. L.; and Adams, B. R.: A Molecular Beam/Quadrupole Mass Spectrometer System With Synchronized Beam Modulation and Digital Waveform Analysis. Presented at the American Society for Mass Spectrometry 31st Annual Conference on Mass Spectrometry and Allied Topics, May 8-13, 1983, Boston, Massachusetts. Extended Abstract No. MOA 2. In Volume of Abstracts.  
(Subject Category 25 RTOP 505-43-83)
1190. Rogers, R. Clayton; and Weidner, Elizabeth H.: Numerical Predictions of Residence Times Behind a Rearward Facing Step with Transverse Slot Injection. Presented at the Twentieth JANNAF Combustion Meeting, October 17-21, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 07 RTOP 505-43-83)
1191. Townsend, James C.: Interactive Graphics for QUICK Geometry Modeling. Presented at the Symposium on Computer-Aided Geometry Modeling, April 20-22, 1983, Hampton, Virginia. In NASA CP-2272.  
(Subject Category 02 RTOP 505-31-03)

1192. Trexler, C. A.; and Pinckney, S. Z.: Inlet Research for the Langley Airframe Integrated Scramjet. Presented at the 1983 JANNAF Propulsion Meeting, February 14-18, 1983, Monterey, California. CPIA Proceedings Pending.  
(Subject Category 07 RTOP 505-43-83)
1193. Wilkinson, Stephen P.: Influence of Wall Permeability on Turbulent Boundary Layer Properties. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0294.  
(Subject Category 34 RTOP 505-31-23)
1194. Wilkinson, Stephen P.; and Malik, Mujeeb R.: Stability Experiments in Rotating-Disk Flow. Presented at the AIAA 16th Fluid and Plasma Dynamics Conference, July 12-14, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1760.  
(Subject Category 34 RTOP 505-31-13)
1195. Wood, Richard M.; Miller, David S.; Hahne, David E.; Niedling, Larry G.; and Klein, John R.: Status Review of a Supersonically Biased Fighter Wing-Design Study. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1857.  
(Subject Category 02 RTOP 505-43-23)
1196. Zang, Thomas A.; and Hussaini, M. Y.: Recent Applications of Spectral Methods in Fluid Dynamics. Presented at the AMS 1983 Summer Seminar on Large-Scale Computations in Fluid Mechanics, June 27 - July 1, 1983, LaJolla, California. Proceedings Pending.  
(Subject Category 02 RTOP 505-31-03)

#### Technical Talks

1197. Bushnell, Dennis M.: Turbulent Drag Reduction Through Non-Planar Geometry-- In the Laboratory and in Nature. Presented at the 1983 NASA/ASEE Summer Faculty Research Program Lecture Series, June 8, 1983, Hampton, Virginia.  
(Subject Category 34 RTOP 505-31-13)
1198. Dwoyer, Douglas L.; Walters, Robert W.; and Abarbanel, Saul S.: Implicit Finite-Difference Methods for Compressible Flow Computations. Presented at the American Mathematical Society/Society for Industrial and Applied Mathematics 1983 Summer Seminar on Large-Scale Computations in Fluid Mechanics, July 4-8, 1983, Los Angeles, California.  
(Subject Category 02 RTOP 505-31-03)
1199. Hefner, Jerry N.: Application of the  $e^N$  Method to Boundary-Layer-Transition Prediction. Presented at the Howard University Workshop on Exterior Domain Problems in Mechanics, June 20-24, 1983, Washington, DC.  
(Subject Category 34 RTOP 505-31-13)
1200. Kopriva, David A.; and Zang, Thomas A.: Application of Spectral Collocation Methods to Inviscid Compressible Flows. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 02 RTOP 505-31-03)

- 1201. Sawyer, Wallace C.: Missile Aerodynamics. Presented at the University of Tennessee Space Institute Short Course on Missile Aerodynamics, May 20, 1983, Tullahoma, Tennessee.  
(Subject Category 02 RTOP 505-43-23)
- 1202. Spearman, M. Leroy: International Missile Developments. Presented at the University of Tennessee Space Institute Short Course on Missile Aerodynamics, May 20, 1983, Tullahoma, Tennessee.  
(Subject Category 99 RTOP 505-43-43)
- 1203. Zang, Thomas A.: Iterative Techniques for Spectral Methods. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 02 RTOP 505-31-03)

#### Computer Programs

- 1204. Baker, A. J.; Manhardt, P. D.; and Orzechowski, J. A. (Computational Mechanics Consultants, Inc.): CMC:3DPNS Computer Program for Prediction of Three-Dimensional, Subsonic, Turbulent Aerodynamic Juncture Region Flow. Program No. LAR-13263. Submitted 1983.  
(Subject Category 34)
- 1205. Carlson, Harry W.; and Walkley, Kenneth B. (Kentron International, Inc.): Aerodynamic Analysis of Low Speed Wing Flap Systems (SABAERF). Program No. LAR-13116. Submitted 1983.  
(Subject Category 01)
- 1206. Hall, Jon F.; Neuhart, Dan H.; and Walkley, Kenneth B. (Kentron International, Inc.): An Interactive Graphics Program for Manipulation and Display of Panel Method Geometry (GEOM). Program No. LAR-13224. Submitted 1983.  
(Subject Category 02)

#### Tech Briefs

- 1207. Beckwith, Ivan E.: Low Noise Supersonic Nozzle. NASA Tech Brief LAR-13192.
- 1208. Carlson, Harry W.; and Walkley, Kenneth B. (Kentron International, Inc.): Aerodynamic Analysis of Low Speed Wing Flap Systems. NASA Tech Brief LAR-13116.
- 1209. Creel, Theodore R., Jr.; and Beckwith, Ivan E.: Rod-Wall Sound Shield for Wind Tunnels. NASA Tech Brief LAR-12883.
- 1210. Carlson, Harry W.; and Mack, Robert J.: Supersonic-Wing Nonlinear Aerodynamics. NASA Tech Brief LAR-12788.
- 1211. Dillenius, M. F. E.; and Smith, C. A. (Nielsen Engineering and Research, Inc.): Loads and Pressures on Axisymmetric Bodies With Cruciform Fins. NASA Tech Brief LAR-12936.

- 1212. Hall, Jon F.; Neuhart, Dan H.; and Walkley, Kenneth B. (Kentron International, Inc.): An Interactive Graphics Program for the Manipulation and Display of Panel Method Geometry. NASA Tech Brief LAR-13224.
- 1213. Harris, Julius E.; and Blanchard, Doris K.: Boundary-Layer Equations for Two-Dimensional and Axisymmetric Flow. NASA Tech Brief LAR-13015.
- 1214. Weinstein, Leonard M.: Continuous Laminar Smoke Generator. NASA Tech Brief LAR-13014.

#### Patents

No patents.

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SPACE

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1215. Pritchard, E. Brian: Integrated Requirements for a Space Station. Presented at the AIAA/NASA Symposium on the Space Station, July 18-20, 1983, Arlington, Virginia.  
(Subject Category 15 RTOP 506-64-13)

Technical Talks

1216. Pritchard, E. Brian: Space Station: Gateway to the Future. Presented at the Annual Meeting of the Association of Professional Engineers of the Province of Ontario, The Niagara Chapter, October 18, 1983, Ontario, Canada.  
(Subject Category 15 RTOP 506-64-13)

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.



PUBLICATIONS FOR ATMOSPHERIC SCIENCES DIVISION

Formal Reports

1217. Anon.: Assessment of Techniques for Measuring Tropospheric  $N_xO_y$ . NASA CP-2292, December 1983, 62 p.  
(Avail: NTIS                      Subject Category 46                      RTOP 176-20-10)
1218. Farmer, Franklin H.; Jarrett, Olin, Jr.; and Brown, Clarence A., Jr.: Visible Absorbance Spectra: A Basis for In Situ and Passive Remote Sensing of Phytoplankton Concentration and Community Composition. NASA TP-2094, February 1983, 33 p.  
(Avail: NTIS                      Subject Category 48                      RTOP 146-40-15)
1219. Gregory, Gerald L.; Woods, David C.; and Sebacher, Daniel I.: Airborne Measurements of Launch Vehicle Effluent - Launch of Space Shuttle (STS-1) on April 12, 1981. NASA TP-2090, January 1983, 72 p.  
(Avail: NTIS                      Subject Category 45                      RTOP 925-81-01)
1220. McCormick, M. Patrick; and Brandl, David: SAM II Measurements of the Polar Stratospheric Aerosol, Volume III - October 1979 to April 1980. NASA RP-1106, June 1983, 78 p.  
(Avail: NTIS                      Subject Category 46                      RTOP 665-10-40)
1221. McCormick, M. Patrick; and Brandl, David: SAM II Measurements of the Polar Stratospheric Aerosol, Volume IV - April 1980 to October 1980. NASA RP-1107, June 1983, 78 p.  
(Avail: NTIS                      Subject Category 46                      RTOP 665-10-40)
1222. Sullivan, Edward M.; Thompson, Robert E.; Harvey, Gale A.; Park, Jae H.; and Richardson, D. J.: Halogen Occultation Experiment (HALOE) Gas Cell Life Test Program. NASA TM-84640, August 1983, 73 p.  
(Avail: NTIS                      Subject Category 35                      RTOP 678-12-03)

Quick-Release Technical Memorandums

1223. Benner, D. Chris; Rinsland, C. P.; Richardson, D. J.; Soo, Te-Hsiang; and Smith, M. A. H.: Atlas of High Resolution Infrared Spectra of Carbon Dioxide: February 1983 Edition. NASA TM-84612, February 1983, 196 p.  
(Avail: NTIS                      Subject Category 74                      RTOP 678-14-03)

Contractor Reports

1224. Taback, I.; Kenimer, R. L.; and Butterfield, A. J.: Technology Evaluation of Man-Rated Acceleration Test Equipment for Vestibular Research. (NAS1-16978 The Bionetics Corporation.) NASA CR-172160, September 1983, 99 p.  
(Avail: NTIS                      Subject Category 51                      RTOP 805-01-00)

# Journal Articles and Other Publications

1225. Borucki, W. J.; Orville, R. E.; Levine, J. S.; Harvey, G. A.; and Howell, W. E.: Laboratory Simulation of Venusian Lightning. Geophysical Research Letters, Volume 10, No. 10, October 1983, p. 961-964.  
(Subject Category 46 RTOP 307-02-02)
1226. Brewer, Dana A.; Augustsson, Tommy R.; and Levine, Joel S.: The Photochemistry of Anthropogenic Nonmethane Hydrocarbons in the Troposphere. Journal of Geophysical Research - Oceans and Atmospheres, Volume 88, No. C11, August 20, 1983, p. 6683-6695.  
(Subject Category 46 RTOP 146-20-10)
1227. Browell, E. V.: Remote Sensing of Tropospheric Gases and Aerosols With an Airborne DIAL System. Book entitled Optical and Laser Remote Sensing, editors D. K. Killinger and A. Mooradian, 1983, p. 138-147.  
(Subject Category 47 RTOP 176-40-04)
1228. Browell, E. V.; Carter, A. F.; Shipley, S. T.; Allen, R. J.; Butler, C. F.; Mayo, M. N.; Siviter, J. H., Jr.; and Hall, W. M.: NASA Multipurpose Airborne DIAL System and Measurements of Ozone and Aerosol Profiles. Applied Optics, Volume 22, No. 4, February 15, 1983, p. 522-534.  
(Subject Category 46 RTOP 146-20-10)
1229. Callis, Linwood B.; Natarajan, Murali; and Boughner, Robert E.: On the Relationship Between the Greenhouse Effect, Atmospheric Photochemistry, and Species Distribution. Journal of Geophysical Research, Volume 88, No. C2, February 20, 1983, p. 1401-1426.  
(Subject Category 45 RTOP 147-30-01)
1230. Callis, L. B.; Russell, J. M., III; Haggard, K. V.; and Natarajan, M.: Examination of Wintertime Latitudinal Gradients in Stratospheric NO<sub>2</sub> Using Theory and LIMS Observations. Geophysical Research Letters, Volume 10, No. 10, October 1983, p. 945-948.  
(Subject Category 46 RTOP 147-30-01)
1231. Campbell, J. W.; and Esaias, W. E.: Basis for Spectral Curvature Algorithms in Remote Sensing of Chlorophyll. Applied Optics, Volume 22, April 1983, p. 1084-1093.  
(Subject Category 48 RTOP 146-40-15)
1232. Canuto, V. M.; Levine, J. S.; Augustsson, T. R.; and Imhoff, C. L.: Oxygen and Ozone in the Early Earth's Atmosphere. Precambrian Research, Volume 20, 1983, p. 109-120.  
(Subject Category 46 RTOP 198-30-02)
1233. Canuto, V. M.; Levine, J. S.; Augustsson, T. R.; Imhoff, C. L.; and Giampapa, M. S.: The Young Sun and the Atmosphere and Photochemistry of the Early Earth. Nature, Volume 305, September 1983, p. 281-286.  
(Subject Category 46 RTOP 307-02-02)

1234. Chu, William P.: Calculations of Atmospheric Refraction for Spacecraft Remote Sensing Applications. Applied Optics, Volume 22, No. 5, March 1, 1983, p. 721-725.  
(Subject Category 74 RTOP 619-12-20)
1235. Cofer, Wesley R., III; Schryer, David R.; and Rogowski, Robert S.: Carbon Catalyzed SO<sub>2</sub> Oxidation by NO<sub>2</sub>. AIAA Journal, Volume 21, No. 1, January 1983, p. 151-153.  
(Subject Category 45 RTOP 146-20-10)
1236. Darnell, W. L.; and Harriss, R. C.: Satellite Sensing Capabilities for Surface Temperature and Meteorological Parameters Over the Ocean. International Journal of Remote Sensing, Volume 4, No. 1, 1983, p. 65-92.  
(Subject Category 47 RTOP 146-60-02)
1237. Fishman, Jack; and Seiler, Wolfgang: Correlative Nature of Ozone and Carbon Monoxide in the Troposphere: Implications for the Tropospheric Ozone Budget. Journal of Geophysical Research, Volume 88, No. C6, April 20, 1983, p. 3662-3670.  
(Subject Category 46 RTOP 146-20-08)
1238. Gidel, Louis T.; Crutzen, Paul J.; and Fishman, Jack: A Two-Dimensional Photochemical Model of the Atmosphere I. Chlorocarbon Emissions and Their Effect on Stratospheric Ozone. Journal of Geophysical Research, Volume 88, No. C11, August 20, 1983, p. 6622-6640.  
(Subject Category 46 RTOP 176-10-05)
1239. Green, Richard N.: Accuracy and Resolution of Earth Radiation Budget Estimates. Journal of the Atmospheric Sciences, Volume 40, No. 4, April 1983, p. 977-985.  
(Subject Category 47 RTOP 619-12-20)
1240. Gregory, Gerald L.; Hudgins, Charles H.; and Edahl, Robert A., Jr.: Laboratory Evaluation of an Airborne Ozone Instrument That Compensates for Altitude/Sensitivity Effects. Environmental Science and Technology, Volume 17, No. 2, February 1983, p. 100-103.  
(Subject Category 45 RTOP 146-20-10)
1241. Gupta, Shashi, K.: A Radiative Transfer Model for Surface Radiation Budget Studies. Journal of Quantitative Spectroscopy and Radiative Transfer, Volume 29, 1983, p. 419-427.  
(Subject Category 47 RTOP 146-10-06)
1242. Johnson, Robert W.; and Munday, John C., Jr. (Author/Editors); Carter, Virginia; Kemmerer, Andrew J.; Kendall, Bruce M.; Legeckis, Richard; Polcyn, Fabian C.; Proni, John R.; and Walter, Donald J. (Contributing Authors): Chapter 28 - The Marine Environment, American Society of Photogrammetry "Manual of Remote Sensing, Second Edition," Volume 11, 1983, p. 1371-1496.  
(Subject Category 48 RTOP 146-40-15)

1243. Keating, G. M.; Frank, L.; Craven, J.; Shapiro, M.; Young, D.; and Bhartia, P.: Global Pictures of the Ozone Field From High Altitudes From DE-1. Advances in Space Research, Volume 2, No. 5, 1983, p. 183-188.  
(Subject Category 46      RTOP 146-60-01)
1244. Labitzke, K.; Naujokat, B.; and McCormick, M. P.: Temperature Effects on the Stratosphere of the April 4, 1982 Eruption of El Chichon, Mexico. Geophysical Research Letters, Volume 10, No. 1, January 1983, p. 24-26.  
(Subject Category 47      RTOP 672-20-07)
1245. Levine, Joel S.; and Shaw, Edwin F., Jr.: In Situ Aircraft Measurements of Enhanced Levels of N<sub>2</sub>O Oxide Associated With Thunderstorm Lightning. Nature, Volume 303, No. 5915, May 1983, p. 312-314.  
(Subject Category 46      RTOP 176-20-02)
1246. Lindberg, S. E.; and Harriss, R. C.: Water and Acid Soluble Trace Metals in Atmospheric Particles. Journal of Geophysical Research, Volume 88, No. C9, June 20, 1983, p. 5091-5100.  
(Subject Category 45)
1247. Martz, Robert F.; Sebacher, Daniel I.; and White, David C.: Biomass Measurement of Methane Forming Bacteria in Environmental Samples. Journal of Microbiological Methods, Volume 1, 1983, p. 53-61.  
(Subject Category 45      RTOP 199-30-36)
1248. McCormick, M. P.: Aerosol Measurements From Earth Orbiting Spacecraft. Advances in Space Research, Volume 2, No. 5, 1983, p. 73-86.  
(Subject Category 46      RTOP 665-40-40)
1249. McCormick, M. Patrick: Global Distribution of Stratospheric Aerosols by Satellite Measurements. AIAA Journal, Volume 21, April 1983, p. 633-635.  
(Subject Category 46      RTOP 665-10-40)
1250. McCormick, M. P.; and Swissler, T. J.: Stratospheric Aerosol Mass and Latitudinal Distribution of the El Chichon Eruption Cloud for October 1982. Geophysical Research Letters, Volume 10, No. 9, September 1983, p. 877-880.  
(Subject Category 46      RTOP 672-21-15)
1251. McCormick, M. P.; Trepte, C. R.; and Kent, G. S.: Spatial Changes in the Stratospheric Aerosol Associated With the North Polar Vortex. Geophysical Research Letters, Volume 10, No. 10, October 1983, p. 941-944.  
(Subject Category 46      RTOP 672-21-15)
1252. McNeal, Robert J.; Mugler, John P., Jr.; Harriss, Robert C.; and Hoell, James M., Jr.: The NASA Global Tropospheric Experiment. EOS, Volume 64, No. 38, September 1983, p. 561-562.  
(Subject Category 46      RTOP 176-20-09)
1253. Park, J. H.: An Analysis Method for Fourier Transform Spectroscopy. Applied Optics, Volume 22, No. 6, March 15, 1983, p. 835-849.  
(Subject Category 46      RTOP 620-14-00)

1254. Pellett, G. L.; Sebacher, D. I.; Bendura, R. J.; and Wornom, D. E.: HCl in Rocket Exhaust Clouds: Atmospheric Dispersion Acid Aerosol Characteristics and Acid Rain Deposition. Journal of Air Pollution Control Association, Volume 33, No. 4, April 1983, p. 304-311.  
(Subject Category 45 RTOP 989-15-20)
1255. Poole, L. R.; and Esaias, W. E.: Influence of Suspended Inorganic Sediment on Airborne Laser Fluorosensor Measurements. Applied Optics, Volume 22, February 1, 1983, p. 380-381.  
(Subject Category 48 RTOP 146-40-15)
1256. Remsberg, Ellis E.; and Woodbury, Gerard E.: Stability of the Surface Layer and Its Relation to the Dispersion of Primary Pollutants in St. Louis. Journal of Climate and Applied Meteorology, Volume 22, No. 2, February 1983, p. 244-255.  
(Subject Category 45 RTOP 146-20-10)
1257. Rinsland, C. P.; Goldman, A.; Murcray, F. J.; Murcray, D. G.; Smith, M. A. H.; Seals, R. K., Jr.; and Larsen, J. C.: Stratospheric Temperature Profile from Balloon-Borne Measurements of the 10.4  $\mu\text{m}$  Band of  $\text{CO}_2$ . Journal of the Quantitative Spectroscopy Radiative Transfer, Volume 30, No. 4, 1983, p. 327-334.  
(Subject Category 46 RTOP 147-30-01)
1258. Russell, P. B.; McCormick, M. P.; and Swissler, T. J.: Validation of Aerosol Measurements by the Satellite Sensors SAM II and SAGE. Advances in Space Research, Volume 2, No. 5, 1983, p. 123-126.  
(Subject Category 46 RTOP 665-40-40)
1259. Russell, P. B.; Morley, B. M.; and Browell, E. V.: Spaceborne Lidar Measurement Accuracy: Simulation of Aerosol, Cloud, Molecular Density, and Temperature Retrievals. Advances in Space Research, Volume 2, No. 5, 1983, p. 49-53.  
(Subject Category 47 RTOP 618-32-33)
1260. Russell, J. M., III; Remsberg, E. E.; Gordley, L. L.; Gille, J. C.; and Bailey, P. L.: The Variability of Stratospheric Nitrogen Compounds Observed by LIMS in the Winter of 1978-1979. Space Research, Volume 2, No. 10, 1983, p. 169-172.  
(Subject Category 46 RTOP 665-10-40)
1261. Sebacher, Daniel I.; Harriss, Robert C.; and Bartlett, Karen B.: Methane Flux Across the Air-Water Interface: Air Velocity Effects. Tellus, Volume 35B, 1983, p. 103-109.  
(Subject Category 45 RTOP 199-30-36)
1262. Smith, G. Louis; and Bess, T. Dale: Annual Cycle and Spatial Spectra of Earth Emitted Radiation at Large Scales. Journal of the Atmospheric Sciences, Volume 40, No. 4, April 1983, p. 998-1015.  
(Subject Category 47 RTOP 146-10-06)

1263. Smith, M. A. H.; and Gordley, L. L.: Sensitivity of Ozone Retrievals in Limb-Viewing Experiments to Errors in Line-Width Parameters. Journal of Quantitative Spectroscopy and Radiative Transfer, Volume 29, No. 5, 1983, p. 413-418.  
(Subject Category 45      RTOP 147-30-01)
1264. Steele, H. M.; Hamill, Patrick; McCormick, M. P.; and Swissler, T. J.: On the Formation of Polar Stratospheric Clouds. Journal of the Atmospheric Sciences, Volume 40, No. 8, August 1983, p. 2055-2067.  
(Subject Category 46      RTOP 665-10-40)
1265. Swissler, T. J.; McCormick, M. P.; and Spinhirne, J. D.: El Chichon Eruption Cloud: Comparison of Lidar and Optical Thickness Measurements for October 1982. Geophysical Research Letters, Volume 10, September 1983, p. 885-888.  
(Subject Category 46      RTOP 672-21-15)
1266. Turner, Ralph R.; Laws, Edward A.; and Harriss, Robert C.: Nutrient Retention and Transformation in Relation to Hydraulic Flushing Rate in a Small Impoundment. Freshwater Biology, Volume 13, 1983, p. 113-127.  
(Subject Category 45)
1267. Wallio, H. Andrew; Casas, Joseph C.; Gormsen, B. B.; Reichle, Henry G., Jr.; and Saylor, Mary S.: Carbon Monoxide Mixing Ratio Inference From Gas Filter Radiometer Data. Applied Optics, Volume 21, No. 5, March 1, 1983, p. 749-754.  
(Subject Category 46      RTOP 619-22-31)
1268. Woods, David C.; and Chuan, Raymond L.: Size-Specific Composition of Aerosols in the El Chichon Volcanic Cloud. Geophysical Research Letters, Volume 10, No. 11, November 1983, p. 1041-1044.  
(Subject Category 47      RTOP 672-21-13)

#### Meeting Presentations

1269. Alvarez, J. M.; Larsen, Jack C.; and Chu, W. P.: The Upcoming Test Flight of a Laser Heterodyne Spectrometer. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings.  
(Subject Category 46      RTOP 506-61-73)
1270. Anderson, Iris C.; and Levine, Joel S.: Biogenic Production of Nitrogen Oxides. Presented at the 1983 Spring Meeting of the American Geophysical Union, May 30 - June 3, 1983, Baltimore, Maryland. Abstract published in EOS Transactions, Volume 64, No. 18, May 1983, p. 195.  
(Subject Category 46      RTOP 176-20-03)
1271. Augustsson, Tommy R.; and Brewer, Dana A.: The Sulfur Budget of the Troposphere. Presented at the IAMAP/CACGP International Symposium on Tropospheric Chemistry, August 28 - September 3, 1983, Oxford, England.  
(Subject Category 46      RTOP 176-20-02)

1272. Barkstrom, Bruce R.: The Measurement of the Earth's Radiation Budget as a Problem in Information Theory: A Tool for the Rational Design of Earth Observing Systems. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings.  
(Subject Category 47      RTOP 619-12-30)
1273. Bess, T. Dale.: Zonal and Hemispheric Variability of Nimbus 6 ERB Longwave Radiation. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings.  
(Subject Category 47      RTOP 672-40-06)
1274. Brewer, D. A.; Augustsson, T. R.; Fishman, J.; Levine, J. S.; and Ogliaruso, M. A.: An Investigation of Organic Nitrate Formation From Isoprene Oxidation in the Troposphere. Presented at the 5th International Symposium of IAMAP Commission on Atmospheric Chemistry and Global Pollution, August 29 - September 3, 1983, Oxford, England.  
(Subject Category 46      RTOP 176-20-02)
1275. Browell, Edward V.: Differential Absorption Lidar Measurements of the Atmospheric Species. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings.  
(Subject Category 47      RTOP 146-20-10)
1276. Buglia, James J.: Recovery of Water Vapor Profiles in the 0.94 Micron Band Using the SAGE II Instrument System. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings.  
(Subject Category 46      RTOP 619-12-30)
1277. Cofer, W. R., III; Bendura, R. J.; Sebach, D. I.; Pellett, G. L.; Gregory, G. L.; and Maddrea, G. L., Jr.: Airborne Measurements of Space Shuttle Exhaust Constituents. Presented at the AIAA Shuttle Environment and Operations Conference, October 31 - November 2, 1983, Washington, DC. AIAA Paper No. 83-2587. In Proceedings.  
(Subject Category 45      RTOP 925-81-01)
1278. Costen, R. C.; and Whitworth, S. L.: Precipitation and Cloudiness Sensitivity Studies With an Energy Balance Climate Model. Presented at the American Geophysical Union Fall Meeting, December 5-9, 1983, San Francisco, California. Abstract published in EOS, Volume 64, No. 45, November 8, 1983, p. 671.  
(Subject Category 42      RTOP 672-22-04)
1279. Fuller, W. H., Jr.; and Hunt, W. H.: Airborne Lidar Observations of the El Chichon Stratospheric Cloud in the Arctic Region. Presented at the 1983 Annual Meeting of the Optical Society of America, October 17-20, 1983, New Orleans, Louisiana. Summary Published in JOSA, December 1983.  
(Subject Category 45      RTOP 665-10-40)

1280. Garcia, Frank, Jr.; Jones, Jess H.; and Henderson, Herbert R.: A Comparison of Measured and Theoretical Predictions for STS Ascent and Entry Sonic Booms. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283. (Subject Category 71 RTOP 989-15-20)
1281. Goroch, Andreas K.; Browell, Edward V.; Markson, Ralph; and Wilkerson, Thomas D.: Optical Measurements of Water Vapor Over the Gulf Stream. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings. (Subject Category 47 RTOP 146-30-03)
1282. Green, Richard N.: Accuracy of Earth Albedo Estimates From Wide-Angle Radiation Measurements. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 619-12-30)
1283. Gupta, Shashi, K.; Darnell, Wayne L.; and Staylor, W. Frank: A Parameterization for Downward Longwave Radiation From Satellite Meteorological Data. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 672-40-07)
1284. Harrison, Edwin F.; and Minnis, Patrick: Influence of Clouds on the Earth's Radiation Budget Determined From GOES Data. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 672-22-04)
1285. Keating, G. M.; Pyle, J. A.; Pitts, M. C.; Young, D. F.; Nicholson, J. Y., III; and Barnett, J. J.: Latitudinal-Seasonal Variations of Ozone-Temperature Relations. Presented at the American Geophysical Union Fall Meeting, December 5-9, 1983, San Francisco, California. Abstract published in EOS, Volume 64, No. 45, November 8, 1983, p. 780. (Subject Category 46 RTOP 673-41-07)
1286. Levine, Joel S.: The Nitrogen Cycle: Atmosphere Interactions. Presented at the NASA/JPL Workshop on the Interactions of Global Biogeochemical Cycles, April 10-13, 1983, Arlington, Virginia. NASA CP Pending. (Subject Category 46 RTOP 176-20-02)
1287. Levine, Joel S.; Augustsson, Tommy R.; Anderson, Iris C.; and Hoell, James M., Jr.: The NO<sub>x</sub> Budget of the Troposphere. Presented at the IAMAP/CACGP International Symposium on Tropospheric Chemistry, August 28 - September 3, 1983, Oxford, England. (Subject Category 46 RTOP 176-20-02)



1288. McDougal, D. S.; Browell, E. V.; Shipley, S. T.; Shumate, M. S.; and Grant, W. B.: Two-Dimensional Sensing of Ozone and Aerosols: Comparison Between Remote and In Situ Sensors. Presented at the APCA 76th Annual Meeting of the Air Pollution Control Association, June 19-24, 1983, Atlanta, Georgia. APCA Paper No. 83-25.2.  
(Subject Category 45 RTOP 146-20-10)
1289. Minnis, Patrick; Gibson, Gary G.; and Denn, Frederick M.: Diurnal Cloud Variations Over South America and the Southeastern Pacific. Presented at the AMS/INPE/BMS First International Conference on Southern Hemisphere Meteorology, July 31 - August 6, 1983, Sao Jose dos Campos, Brazil. In Proceedings.  
(Subject Category 47 RTOP 672-22-04)
1290. Minnis, Patrick; and Harrison, Edwin F.: Clear-Sky Radiative Characteristics of South America Derived From Geostationary Satellite Data. Presented at the AMS/INPE/BMS First International Conference on Southern Hemisphere Meteorology, July 31 - August 6, 1983, Sao Jose dos Campos, Brazil. In Proceedings.  
(Subject Category 47 RTOP 672-22-04)
1291. Minnis, Patrick; and Harrison, Edwin F.: Diurnal and Seasonal Variations of Clouds From Geostationary Satellite Data. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings.  
(Subject Category 47 RTOP 672-40-07)
1292. Reichle, Henry G., Jr.; Hesketh, Wilfred D.; Holland, J. Alvin; Sherrill, Robert T.; Wallio, H. Andrew; and Casas, Joseph C.: Performance of the MAPS Carbon Monoxide Experiment. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings.  
(Subject Category 47 RTOP 618-22-31)
1293. Rinsland, C. P.; Benner, D. C.; Richardson, D. J.; and Smith, M. A. H.: Line Parameters for the 5- $\mu$ m Bands of Carbon Dioxide. Presented at the Ohio State University 38th Annual Symposium on Molecular Spectroscopy, June 13-17, 1983, Columbus, Ohio. Abstract No. ME6. In Proceedings.  
(Subject Category 72 RTOP 678-12-03)
1294. Russell, James M., III: Remote Measurement of Atmospheric Species Using Gas Filter Correlation Spectroscopy. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings.  
(Subject Category 46 RTOP 147-30-01)
1295. Shipley, S. T.; and Browell, E. V.: Airborne Lidar: Potential for Mixed Layer Measurements and Observations of Long-Range Transport. Presented at the Air Pollution Control Association International Specialty Conference on the Meteorology of Acidic Deposition, October 16-19, 1983, Hartford, Connecticut. Proceedings Pending.  
(Subject Category 45 RTOP 146-20-10)

1296. Smith, G. Louis: Effect of Limb Darkening Function Variations on Deconvolution of Wide Field of View Measurements of Earth Emitted Radiation. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 672-40-06)
1297. Smith, G. Louis; Bess, T. Dale; and Minnis, Patrick: Sampling Theory for Estimating Sampling Errors of Regional Radiation Averages Based on Satellite Measurements. Presented at the AMS/AIAA Ninth Conference on Aerospace and Aeronautical Meteorology, June 6-9, 1983, Omaha, Nebraska. Proceedings Pending. (Subject Category 47 RTOP 146-10-06)
1298. Smith, M. A. H.; and Harvey, G. A.: Measurements of the  $\nu_3$  Band of HCN Broadened by  $N_2$  and by HF. Presented at the Ohio State University 38th Annual Symposium on Molecular Spectroscopy, June 13-17, 1983, Columbus, Ohio. Abstract No. TE7. In Proceedings. (Subject Category 72 RTOP 147-30-01)
1299. Smith, M. A. H.; Rinsland, C. P.; and Russell, J. M., III: Spectroscopic Measurements of Atmospheric HCN. Presented at the 1983 American Geophysical Union Spring Meeting, May 30 - June 3, 1983, Baltimore, Maryland. Abstract published in EOS Transactions, Volume 64, No. 18, May 1983, p. 198. (Subject Category 45 RTOP 147-44-02)
1300. Staylor, W. Frank; Darnell, Wayne L.; and Gupta, Shashi K.: Estimation of Clear-Sky Insolation Using Satellite and Ground Meteorological Data. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 672-40-07)
1301. Stuhlmann, Rolf; Minnis, Patrick; and Smith, G. Louis: A Comparison of Experimental and Theoretical Bidirectional Reflectance Functions. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 672-40-06)
1302. Thompson, R. E.; Park, J. H.; Smith, M. A. H.; Harvey, G. A.; and Russell, J. M., III: Nitrogen Broadened Halfwidths of HF in the 1-0 Band. Presented at the Ohio State University 38th Annual Symposium on Molecular Spectroscopy, June 13-17, 1983, Columbus, Ohio. Abstract No. RE11. In Proceedings. (Subject Category 72 RTOP 678-12-03)
1303. Wallio, H. Andrew; and Gormsen, Barbara B.: Effects of Error in the CO Inferal Technique as a Function of GFCR Instrument Parameters. Presented at the OSA/AFOSR Topical Meeting on Optical Techniques for Remote Probing of the Atmosphere, January 10-12, 1983, Incline Village, Nevada. In Proceedings. (Subject Category 47 RTOP 518-22-31)

1304. Wallio, H. Andrew; and Gormsen, Barbara B.: The Effect of Reflected Solar Radiation on Retrieved CO Mixing Ratios. Presented at the American Geophysical Union Fall Meeting, December 5-9, 1983, San Francisco, California. Abstract published in EOS, Volume 64, No. 45, November 8, 1983, p. 670.

(Subject Category 45      RTOP 618-22-31)

1305. Wielicki, Bruce A.: Cloud Fraction and Cloud Size Distributions Derived Using Landsat Multispectral Scanner Data. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings.

(Subject Category 42      RTOP 307-02-02)

#### Technical Talks

1306. Barkstrom, B. R.: The Measurement of the Earth's Radiation Budget as a Problem in Information Theory: A Tool for the Rational Design of Earth Observing Systems. Presented at the International Radiation Commission/COSPAR/WMO International Experts Meeting on Satellite Systems to Measure Radiation Budget Parameters and Climate Change Signals, August 29 - September 2, 1983, Igls, Austria.

(Subject Category 47      RTOP 619-12-30)

1307. Browell, E. V.; Harriss, R. C.; Gregory, G. L.; Sebacher, D. I.; and Shipley, S. T.: Remote and In Situ Aerosol Measurements Over the Atlantic. Presented at the IAMAP/CACGP International Symposium on Tropospheric Chemistry, August 28 - September 3, 1983, Oxford, England.

(Subject Category 46      RTOP 176-40-04)

1308. Callis, Linwood B.; and Alpert, Jordan C.: An Assessment of Thermal, Wind, and Planetary Wave Changes in the Middle and Lower Atmosphere Due to 11-Year UV Flux Variations. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.

(Subject Category 46      RTOP 147-31-05)

1309. Callis, L. B.; Russell, J. M., III; Natarajan, M.; and Haggard, K. V.: A Photochemical and Transport Study of Stratospheric Nitrogen Dioxide Using Nimbus 7 LIMS Data. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.

(Subject Category 46      RTOP 147-30-01)

1310. Carter, Arlen F.; and Browell, Edward V.: Airborne DIAL System for Measurements of Tropospheric Gases and Aerosols. Presented at the EPA Third Annual National Symposium on Recent Advances in the Measurement of Pollutants From Ambient Air and Stationary Sources, May 3-5, 1983, Raleigh, North Carolina.

(Subject Category 45      RTOP 146-20-10)

1311. Chu, William P.: Satellite Observations of Stratospheric NO<sub>2</sub> by SAGE. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 46 RTOP 665-40-40)
1312. Chuan, Raymond L.; and Woods, David C.: Temporal Variations of the El Chichon Stratospheric Cloud. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 46 RTOP 672-21-13)
1313. Fishman, Jack: The Seasonal Behavior of Reactive Nitrogen in the Troposphere as Inferred from Tropospheric Modeling Studies. Presented at the IAMAP/CACGP International Symposium on Tropospheric Chemistry, August 28 - September 3, 1983, Oxford, England.  
(Subject Category 46 RTOP 176-10-05)
1314. Gille, John C.; Beck, Sharon A.; and Russell, James M., III: Mean Distribution of Nitric Acid in the Stratosphere. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 46 RTOP 147-30-01)
1315. Gille, J. C.; Lyjak, L. V.; and Russell, J. M., III: The Role of Transports in the Maintenance of the Ozone Distribution. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 46 RTOP 146-30-01)
1316. Grose, W. L.; and Boville, B.: The Role of Radiative-Dynamical Processes in the Maintenance of the Zonal Mean Circulation in the Lower Stratosphere. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 47 RTOP 147-32-07)
1317. Grose, W. L.; Nealy, J. E.; Turner, R. E.; and Blackshear, W. T.: Transport of Trace Species in the Stratosphere - Preliminary Results for a Northern Hemisphere Winter Simulation. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 47 RTOP 147-30-01)
1318. Grose, William L.; Remsberg, Ellis E.; Russell, James M., III; and Gapcynski, John P.: Derived Dynamical Quantities From Nimbus 7 LIMS Measurements and Application to the Study of a Sudden Stratospheric Warming. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 47 RTOP 147-32-07)
1319. Harrison, Edwin F.; and Minnis, Patrick: Diurnal Cloud Variations for Several Seasons. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 47 RTOP 672-22-04)

1320. Hypes, Warren D.: Measurement of Air Pollution From Satellites (MAPS).  
Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-12, 1983  
Reno, Nevada.  
(Subject Category 47 RTOP 618-22-31)
1321. Keating, Gerald M.: Reference Models of Venus Neutral Upper Atmosphere  
Structure Including Chemical Composition. Presented at the XVIII General  
Assembly of the IUGG, 1983 Venus International Reference Atmosphere  
Workshop, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 91 RTOP 889-50-48)
1322. Keating, G. M.; Barnett, J. J.; Borucki, W. J.; Pyle, J. A.; Pitts, M. C.;  
Nicholson, J. Y., III; and Young, D. F.: High Sensitivities of Ozone to  
Temperature Near Stratopause. Presented at the XVIII General Assembly of  
the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 46 RTOP 673-41-07)
1323. Kurzeja, R. J.; Callis, L. B.; Russell, J. M., III; and Haggard, K. V.:  
Stratospheric Ozone: Comparison of LIMS Observations With Theory.  
Presented at the American Meteorological Society Fourth Conference on  
Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston,  
Massachusetts.  
(Subject Category 32 RTOP 147-30-01)
1324. Levine, Joel S.: The Earth's Atmosphere: Past, Present, and Future.  
Presented at the VPI&SU CASW Twenty First Annual New Horizons of Science  
Briefing, November 6-10, 1983, Blacksburg, Virginia.  
(Subject Category 46 RTOP 176-20-02)
1325. Levine, Joel S.; and Augustsson, Tommy R.: Atmospheric-Biospheric  
Interactions: Past, Present, and Future. Presented at the NASA/Goddard  
Space Flight Center College Park Colloquia on Chemical Evolution VII:  
Global Habitability and Chemical Evolution, November 3-4, 1983, College  
Park, Maryland.  
(Subject Category 46 RTOP 176-20-02)
1326. McCormick, M. P.: Stratospheric Aerosol Climatology in the Polar Regions as  
Observed by SAM II. Presented at the XVIII General Assembly of the IUGG,  
August 15-27, 1983, Hamburg, Germany.  
(Subject Category 46 RTOP 665-10-40)
1327. McCormick, M. P.: Satellite and Lidar Measurements of the El Chichon  
Stratospheric Cloud. Presented at the XVIII General Assembly of the IUGG,  
August 15-27, 1983, Hamburg, Germany.  
(Subject Category 46 RTOP 672-20-07)
1328. McCormick, M. P.: Airborne and Surface Observations of Stratospheric  
Aerosols. Presented at the AGU/AMS Symposium on Climatic Effects of  
Volcanic Dust and Aerosols in the Upper Atmosphere, March 18, 1983,  
Boulder, Colorado.  
(Subject Category 46 RTOP 665-10-40)

1329. McCormick, M. P.: Lidar and Satellite-Borne Optical Measurements of Stratospheric Aerosols. Presented at the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO '83), May 17-20, 1983, Baltimore, Maryland.  
(Subject Category 46 RTOP 665-10-40)
1330. McCormick, M. P.: Lidar and Satellite Stratospheric Observations of Recent Volcanic Eruptions. Presented at the NASA/GSFC Climate and Radiation Seminars, October 5, 1983, Greenbelt, Maryland.  
(Subject Category 46 RTOP 672-21-15)
1331. McCormick, M. P.: Satellite and Lidar Measurements of Stratospheric Aerosols. Presented at the University of Maryland, 1983 American Association for Aerosol Research, April 18-22, 1983, College Park, Maryland.  
(Subject Category 46 RTOP 665-40-40)
1332. Remsberg, Ellis E.; Gordley, Larry L.; and Russell, James M., III: A Nighttime Secondary Ozone Maximum Observed in the Mesosphere From LIMS Data. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 46 RTOP 665-10-40)
1333. Remsberg, Ellis E.; Russell, James M., III; and Gordley, Larry L.: The Occurrence and Distribution of PSC's as Determined From the Nimbus 7 LIMS Data Set. Presented at the NASA Workshop "Polar Stratospheric Clouds: Their Role in Atmospheric Processes," June 20-22, 1983, Virginia Beach, Virginia.  
(Subject Category 46 RTOP 147-32-07)
1334. Remsberg, E. E.; Russell, J. M., III; Gordley, L. L.; Marshall, B. T.; and Gille, J. C.: The Climatology of Ozone in the Lower Stratosphere from LIMS. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts. Abstract Paper No. 6.1.  
(Subject Category 47 RTOP 665-10-40)
1335. Russell, James M., III; Gordley, Larry L.; Remsberg, Ellis E.; and Callis, Linwood B.: The Variability of NO<sub>2</sub> in the Polar Winter Night Observed by LIMS. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 47 RTOP 147-30-01)
1336. Russell, J. M., III; Remsberg, E. E.; Gordley, L. L.; Gille, J. C.; and Marshall, B. T.: The Climatology of Stratospheric Water Vapor Measured by LIMS on Nimbus 7. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 46 RTOP 147-30-01)

1337. Shipley, S. T.; Browell, E. V.; Orndorff, B. L.; and McDougal, D. S.: Airborne Lidar Observations of Long-Range Transport in the Free Troposphere. Presented at the American Meteorological Society Sixth Symposium on Turbulence and Diffusion, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 47 RTOP 146-20-10)
1338. Smith, G. Louis: Deconvolution of ERB Wide-Field-of-View Measurements of Reflected Solar Radiation. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 47 RTOP 672-40-06)
1339. Smith, G. Louis: A Variational Formulation for Time-Dependent Climate Models. Presented at the American Meteorological Society's Second Conference on Climate Variations, January 10-14, 1983, New Orleans, Louisiana.  
(Subject Category 47 RTOP 146-10-06)
1340. Smith, G. Louis; and Minnis, Patrick: Spatial Spectra of Earth-Emitted Radiation at Mesoscale and Synoptic Scales. Presented at the AMS Eighth Conference on Probability and Statistics in Atmospheric Sciences, November 16-18, 1983, Hot Springs, Arkansas.  
(Subject Category 47 RTOP 672-40-06)
1341. Solomon, S.; and Russell, J. M., III: Model Calculations and Observations of NO<sub>2</sub> Abundance in the Mesosphere and Upper Stratosphere. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany.  
(Subject Category 47 RTOP 147-32-07)
1342. Suttles, J. T.; Darnell, W. L.; Gupta, S. K.; and Staylor, W. F.: Determination of Downward Surface Radiation From Satellite Measurements. Presented at the International Radiation Commission/COSPAR/WMO Experts Meeting on Satellite Systems to Measure Radiation Budget Parameters and Climate Change Signals, August 29 - September 2, 1983, Igls, Austria.  
(Subject Category 47 RTOP 672-40-07)
1343. Trepte, C. R.; and McCormick, M. P.: Observations of Cirrus in the Lower Tropical Stratosphere. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 47 RTOP 619-12-30)
1344. Wang, Pi-Huan; and McCormick, M. P.: The Phase Relationship Between Ozone and Temperature Waves Near 55°N During Late February 1979 Stratosphere Warming. Presented at the American Meteorological Society Fourth Conference on the Meteorology of the Upper Atmosphere, March 22-25, 1983, Boston, Massachusetts.  
(Subject Category 47 RTOP 619-12-30)
1345. Woods, David C.: Aerosol Measurements in the Shuttle Exhaust Plume. Presented at the 55th Annual Convention of the National Technical Association, July 25-30, 1983, Orlando, Florida.  
(Subject Category 46 RTOP 672-21-13)

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.



PUBLICATIONS FOR SPACE SYSTEMS DIVISION

Formal Reports

1346. Arrington, James P.; and Jones, Jim J. (Compilers): Shuttle Performance: Lessons Learned - Part 1. NASA CP-2283, October 1983, 660 p.  
(Avail: NTIS Subject Category 16 RTOP 506-51-13)
1347. Arrington, James P.; and Jones, Jim J. (Compilers): Shuttle Performance: Lessons Learned - Part 2. NASA CP-2283, October 1983, 759 p.  
(Avail: NTIS Subject Category 16 RTOP 506-51-13)
1348. Bernot, Peter T.: Effect of Modifications on Aerodynamic Characteristics of a Single-Stage-to-Orbit Vehicle at Mach 5.9. NASA TM-84565, January 1983, 31 p.  
(Avail: NTIS Subject Category 02 RTOP 506-51-13)
1349. Buoncristiani, A. Martin; and Byvik, Charles E.: Semiconductor Photoelectrochemistry. NASA TP-2088, January 1983, 93 p.  
(Avail: NTIS Subject Category 44 RTOP 506-55-13)
1350. Calloway, Robert L.: Pressures, Forces and Moments, and Shock Shapes for a Geometrically Matched Sphere-Cone and Hyperboloid at Mach 20.3 in Helium. NASA TP-2100, January 1983, 71 p.  
(Avail: NTIS Subject Category 34 RTOP 506-51-13)
1351. DeYoung, R. J.; Walberg, G. D.; Conway, E. J.; and Jones, L. W.: A NASA High-Power Space-Based Laser Research and Applications Program. NASA SP-464, May 1983, 46 p.  
(Avail: NTIS Subject Category 20 RTOP 506-55-13)
1352. Heinbockel, J. H.; Outlaw, R. A.; and Walker, G. H.: A Potential-Energy Scaling Model To Simulate the Initial Stages of Thin-Film Growth. NASA TP-2102, February 1983, 36 p.  
(Avail: NTIS Subject Category 26 RTOP 506-55-43)
1353. Jalufka, N. W.: Direct Nuclear-Pumped Lasers. NASA TP-2091, January 1983, 52 p.  
(Avail: NTIS Subject Category 36 RTOP 506-55-13)
1354. Keafer, Lloyd S., Jr.; and Harrington, Richard F.: Radiometer Requirements for Earth-Observation Systems Using Large Space Antennas. NASA RP-1101, June 1983, 45 p.  
(Avail: NTIS Subject Category 19 RTOP 506-62-23)
1355. Townsend, Lawrence W.; Wilson, John W.; and Bidasaria, Hari B.: Nucleon and Deuteron Scattering Cross Sections From 25 MeV/Nucleon to 22.5 GeV/Nucleon. NASA TM-84636, May 1983, 24 p.  
(Avail: NTIS Subject Category 73 RTOP 199-20-76)

1356. Townsend, Lawrence W.; Wilson, John W.; and Bidasaria, Hari B.: Heavy-Ion Total and Absorption Cross Sections Above 25 MeV/Nucleon. NASA TP-2138, April 1983, 42 p.  
(Avail: NTIS                      Subject Category 73                      RTOP 199-20-76)
1357. Weilmuenster, K. James; and Hamilton, H. Harris, II: Calculations of Inviscid Flow Over Shuttle-Like Vehicles at High Angles of Attack and Comparisons With Experimental Data. NASA TP-2103, May 1983, 89 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-51-13)
1358. Wells, William L.; and Hudgins, JoAnn: Experimental Assessment of a Computer Program Used in Space Shuttle Orbiter Entry Heating Analyses. NASA TM-84572, January 1983, 21 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-51-33)
1359. Wilson, John W.: Heavy Ion Transport in the Straight Ahead Approximation. NASA TP-2178, June 1983, 21 p.  
(Avail: NTIS                      Subject Category 93                      RTOP 199-20-76)
1360. Wilson, John W.; Raju, S.; and Shiu, Y. J.: Solar-Simulator-Pumped Atomic Iodine Laser Kinetics. NASA TP-2182, August 1983, 15 p.  
(Avail: NTIS                      Subject Category 36                      RTOP 506-55-13)
1361. Wilson, John W.; Stith, John J.; and Stock, L. V.: A Simple Model of Space Radiation Damage in GaAs Solar Cells. NASA TP-2242, December 1983, 30 p.  
(Avail: NTIS                      Subject Category 73                      RTOP 506-55-43)

#### Quick-Release Technical Memorandums

1362. Bradley, Pamela F.; Siemers, Paul M., III; Flanagan, Paul F.; and Henry, Martin W.: Pressure Distributions on a 0.04-Scale Model of the Space Shuttle Orbiter's Forward Fuselage in the Langley Unitary Plan Wind Tunnel. NASA TM-84628, March 1983, 100 p.  
(Avail: NTIS                      Subject Category 12                      RTOP 506-63-32)
1363. Bradley, Pamela F.; Siemers, Paul M., III; Flanagan, Paul F.; and Henry, Martin W.: Pressure Distributions Obtained on a 0.04-Scale and 0.02-Scale Model of the Space Shuttle Orbiter's Forward Fuselage in the Langley 20-Inch Mach 6 Air Tunnel. NASA TM-84629, March 1983, 43 p.  
(Avail: NTIS                      Subject Category 12                      RTOP 506-63-32)
1364. Bradley, Pamela F.; Siemers, Paul M., III; Flanagan, Paul F.; and Henry, Martin W.: Pressure Distributions Obtained on a 0.04-Scale and 0.02-Scale Model of the Space Shuttle Orbiter's Forward Fuselage in the Langley Continuous Flow Hypersonic Tunnel. NASA TM-84630, March 1983, 62 p.  
(Avail: NTIS                      Subject Category 12                      RTOP 506-63-32)
1365. Gupta, R. N.; Gnoffo, P. A.; and MacCormack, R. W.: A Viscous Shock-Layer Flowfield Analysis by an Explicit-Implicit Method. NASA TM-84668, May 1983, 17 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 506-51-13)

1366. Hook, W. Ray; and Osborne, Robert S.: An Alternate Concept for Expanding Man's Presence in Space. NASA TM-84617, February 1983, 43 p.  
(Avail: NTIS Subject Category 16 RTOP 906-54-20)
1367. MacConochie, Ian O.; Eldred, Charles H.; and Martin, James A.: Capture-Ejector Satellites. NASA TM-85686, October 1983, 22 p.  
(Avail: NTIS Subject Category 18 RTOP 506-51-13)
1368. MacConochie, Ian O.; and LeMessurier, Robert W.: Weight Trends for a Fully Reusable Advanced Single-Stage Shuttle. NASA TM-85656, September 1983, 29 p.  
(Avail: NTIS Subject Category 18 RTOP 506-63-23)
1369. Miller, Charles G.; Micol, John R.; Gnoffo, Peter A.; and Wilder, Sue E.: Heat-Transfer Distributions on Biconics at Incidence in Hypersonic-Hypervelocity He, N<sub>2</sub>, and Air, and CO<sub>2</sub> Flows. NASA TM-84667, May 1983, 19 p.  
(Avail: NTIS Subject Category 34 RTOP 506-51-13)
1370. Shen, Stewart; and Morris, W. Douglas: Network Simulation Using the Simulation Language for Alternative Modeling (SLAM II). NASA TM-84605, February 1983, 32 p.  
(Avail: NTIS Subject Category 61 RTOP 506-51-13)
1371. Townsend, L. W.; and Bidasaria, H. B.: Analytic Determinations of Single-Folding Optical Potentials. NASA TM-84611, February 1983, 13 p.  
(Avail: NTIS Subject Category 73 RTOP 199-20-76)
1372. Wells, William L.: Heating Measurements on Space Shuttle Orbiter Models With Differentially Deflected Elevons. NASA TM-84646, May 1983, 61 p.  
(Avail: NTIS Subject Category 34 RTOP 506-51-13)
1373. Wright, Robert L.; DeRyder, Dariene D.; Ferebee, Melvin J., Jr.; and Smith, John C.: Interactive Analysis of a Large Aperture Earth Observations Satellite. NASA TM-85638, May 1983, 21 p.  
(Avail: NTIS Subject Category 18 RTOP 506-62-23)
1374. Wright, Robert L.; DeRyder, Dariene D.; and Palmer, Michael T.: Orbital Thermal Analysis of Lattice-Structured Spacecraft Using Color Video Display Techniques. NASA TM-85640, June 1983, 19 p.  
(Avail: NTIS Subject Category 18 RTOP 506-62-23)

#### Contractor Reports

1375. Benepe, David B., Sr.: Development of Aerodynamic Prediction Methods for Irregular Planform Wings. (NAS1-15073 General Dynamics.) NASA CR-3664, February 1983, 480 p.  
(Avail: NTIS Subject Category 02 RTOP 506-51-13)
1376. Bruckner, A. P.; and Mattick, A. T.: High Effectiveness Liquid Droplet/Gas Heat Exchanger for Space Power Applications. (NAG1-327 University of Washington.) NASA CR-172235, September 1983, 9 p.  
(Avail: NTIS Subject Category 34 RTOP 506-55-13)

1377. Engel, Carl D.; and Praharaj, Sarat C.: MINIVER Upgrade for the AVID System, Volume I: LANMIN User's Manual. (NAS1-16983 Remtech, Inc.) NASA CR-172212, August 1983, 127 p.  
(Avail: NTIS Subject Category 61 RTOP 506-51-13)
1378. Engel, Carl D.; and Schmitz, Craig P.: MINIVER Upgrade for the AVID System, Volume II: LANMIN Input Guide. (NAS1-16983 Remtech, Inc.) NASA CR-172213, August 1983, 147 p.  
(Avail: NTIS Subject Category 61 RTOP 506-51-13)
1379. Farrell, C. E.; and Krauze, L. D.: Advanced Earth Observation Spacecraft Computer-Aided Design Software - Technical, User, and Programmer Guide. (NAS1-16756 Martin Marietta Denver Aerospace.) NASA CR-166063, April 1983, 139 p.  
(Avail: NTIS Subject Category 18 RTOP 506-62-23)
1380. Findlay, John T.; Kelly, G. Mel; Heck, Michael L.; and McConnell, Judy G.: STS-8 BET Results. (NAS1-16087 Analytical Mechanics Associates, Inc.) NASA CR-172257, November 1983, 172 p.  
(Avail: NTIS Subject Category 16 RTOP 506-51-13)
1381. Friese, G. J.; Bilyeu, G. D.; and Thomas, M.: Initial '80s Development of Inflated Antennas. (NAS1-16663 L'Garde, Inc.) NASA CR-166060, January 1983, 105 p.  
(Avail: NTIS Subject Category 18 RTOP 506-62-23)
1382. Hall, David W.; Fortenbach, Charles D.; Dimiceli, Emanuel V.; and Parks, Robert W.: A Preliminary Study of Solar Powered Aircraft and Associated Power Trains. (NAS1-16975 Lockheed Missiles & Space Company, Inc.) NASA CR-3699, December 1983, 208 p.  
(Avail: NTIS Subject Category 07 RTOP 505-43-53)
1383. Miles, R. B.; Santavicca, D. A.; and Zimmermann, M.: Evaluation of Non-Intrusive Flow Measurement Technique for a Re-entry Flight Experiment. (NCC1-64 Princeton University.) NASA CR-172142, November 1983, 101 p.  
(Avail: NTIS Subject Category 15 RTOP 506-51-13)
1384. Pond, John E.; and Schmitz, Craig P.: MINIVER Upgrade for the AVID System, Volume III: EXITS User's and Input Guide. (NAS1-16983 Remtech, Inc.) NASA CR-172214, August 1983, 209 p.  
(Avail: NTIS Subject Category 61 RTOP 506-51-13)
1385. Schneider, Richard T.; Kurzweg, Ulrich H.; Cox, John D.; and Weinstein, Neil H.: Research on Solar Pumped Liquid Lasers. (NAG1-135 University of Florida.) NASA CR-172121, March 1983, 33 p.  
(Avail: NTIS Subject Category 44 RTOP 506-55-13)
1386. White, M. J.; Gershkoff, I.; and Lamkin, S.: Analysis and Methodology for Aeronautical Systems Technology Program Planning. (NAS1-16261 ARINC Research Corporation.) NASA CR-166036, January 1983, 211 p.  
(Avail: NTIS Subject Category 01 RTOP 505-34-13)

# Journal Articles and Other Publications

1387. Bidasaria, H. B.; and Townsend, L. W.: Microscopic Optical Potential Analyses of Carbon-Carbon Elastic Scattering. Canadian Journal of Physics, Volume 61, No. 12, December 1983, p. 1660-1662.  
(Subject Category 73 RTOP 199-20-76)
1388. Bidasaria, H. B.; Townsend, L. W.; and Wilson, J. W.: Theory of Carbon-Carbon Scattering From 200 to 290 MeV. Journal of Physics G, Volume 9, No. 1, January 1983, p. L-17 - L-20.  
(Subject Category 73 RTOP 199-20-76)
1389. Byvik, C. E.; Buoncristiani, A. M.; and Smith, B. T.: Limits to Solar Power Conversion Efficiency With Applications to Quantum and Thermal Systems. Journal of Energy, Volume 7, No. 6, November - December 1983.  
(Subject Category 44 RTOP 506-55-13)
1390. Gnoffo, P. A.: A Finite-Volume, Adaptive Grid Algorithm Applied to Planetary Entry Flowfields. AIAA Journal, Volume 21, No. 9, September 1983, p. 1249-1254.  
(Subject Category 34 RTOP 506-51-13)
1391. Gupta, R. N.: Parameters for the Simulation of High Temperature Blown Shock Layers. AIAA Journal, Volume 21, No. 2, February 1983, p. 314-316.  
(Subject Category 34 RTOP 506-51-23)
1392. Gupta, R. N.; Moss, J. N.; and Simmonds, Ann L.: A Comparative Study of Time-Marching and Space-Marching Numerical Methods. AIAA Journal, Volume 21, No. 1, January 1983, p. 145-147.  
(Subject Category 34 RTOP 506-51-23)
1393. Gupta, R. N.; Moss, J. N.; Zoby, E. V.; and Simmonds, A. L.: An Evaluation of Turbulence Models for Massively Blown Surfaces. Progress in Astronautics and Aeronautics, Volume 85, 1983, p. 446-471.  
(Subject Category 34 RTOP 506-51-23)
1394. Hamilton, H. Harris, II: Approximate Method of Predicting Heating on the Windward Side of Space Shuttle Orbiter and Comparisons With Flight Data. Progress in Astronautics and Aeronautics, Volume 85, 1983, p. 21-53.  
(Subject Category 34 RTOP 506-51-13)
1395. Helms, Vernon T., III: An Empirical Method for Computing Leaside Centerline Heating on the Space Shuttle Orbiter. Journal of Spacecraft and Rockets, Volume 20, No. 3, May-June 1983, p. 225-231.  
(Subject Category 34 RTOP 506-51-33)
1396. Hook, W. R.: Living With Complexity and Growth. Astronautics and Aeronautics, Volume 21, March 1983, p. 53-65.  
(Subject Category 16 RTOP 506-62-43)

1397. Jackson, Ray D.; and Youngblood, James W.: Agriculture's Eye in the Sky: Forever Plane Could Give Continuous Crop Data. Crops and Soils Magazine, Volume 36, No. 1, October 1983, p. 15.  
(Subject Category 05 RTOP 505-43-53)
1398. Keafer, L. S., Jr.; and Reichle, H. G., Jr.: July 1981 NASA Workshop on Passive Remote Sensing of the Troposphere. Journal of Spacecraft and Rockets, Volume 20, No. 2, March-April 1983, p. 172-177.  
(Subject Category 45 RTOP 540-01-13)
1399. Kelly, G. M.; Findlay, J. T.; and Compton, H. R.: Shuttle Subsonic Horizontal Wind Estimation. Journal of Spacecraft and Rockets, Volume 20, No. 4, July - August 1983, p. 390-397.  
(Subject Category 34 RTOP 506-51-13)
1400. Lovelace, U. M.; and Wright, R. L.: A Concept for Global Crop Forecasting. Spaceflight, Volume 36, February 1983, p. 59-65.  
(Subject Category 18 RTOP 506-62-43)
1401. Martin, James A.: Hydrocarbon Rocket Engines for Earth-to-Orbit Vehicles. Journal of Spacecraft and Rockets, Volume 20, No. 3, May-June 1983, p. 249-256.  
(Subject Category 15 RTOP 540-03-13)
1402. Outlaw, R. A.; and Heinbockel, J. H.: A Potential Scaling Monte Carlo Simulation of Thin Film Nucleation and Growth. Thin Solid Films, Volume 108, No. 1, October 7, 1983, p. 79-86.  
(Subject Category 26 RTOP 506-55-43)
1403. Outlaw, R. A.; and Peterson, D. T.: The Diffusivity of Hydrogen in Nb Stabilized Stainless Steel. Metallurgical Transactions A, Volume 14A, September 1983, p. 1869-1874.  
(Subject Category 26 RTOP 506-55-43)
1404. Price, Joseph M.: Atmospheric Definition for Shuttle Aerothermodynamic Investigations. Journal of Spacecraft and Rockets, Volume 20, No. 2, March-April 1983, p. 133-140.  
(Subject Category 18 RTOP 506-51-33)
1405. Pruett, C. D.; Wolf, H.; Heck, M. L.; and Siemers, P. M., III: Innovative Air Data System for the Space Shuttle Orbiter. Journal of Spacecraft and Rockets, Volume 20, January-February 1983, p. 51-69.  
(Subject Category 19 RTOP 506-63-32)
1406. Shinn, Judy L.; Moss, James N.; and Simmonds, Ann L.: Viscous Shock-Layer Heating Analysis for the Shuttle Windward Symmetry Plane With Surface Finite Catalytic Recombination Rates. Progress in Astronautics and Aeronautics, Volume 85, 1983, p. 149-180.  
(Subject Category 34 RTOP 506-51-13)
1407. Throckmorton, David A.: Benchmark Determination of Shuttle Orbiter Entry Aerodynamic Heat-Transfer Data. Journal of Spacecraft and Rockets, Volume 20, No. 3, May-June 1983, p. 219-224.  
(Subject Category 34 RTOP 506-51-33)

1408. Throckmorton, D. A.: Influence of Radiant Energy Exchange on the Determination of Convective Heat-Transfer Rates to Orbiter Leeside Surfaces During Entry. Progress in Astronautics and Aeronautics, Volume 85, 1983, p. 78-96.  
(Subject Category 34 RTOP 506-51-33)
1409. Townsend, L. W.: Abrasion Cross Sections for  $^{20}\text{Ne}$  Projectiles at 2.1 GeV/Nucleon. Canadian Journal of Physics, Volume 61, No. 1, January 1983, p. 93-98.  
(Subject Category 73 RTOP 199-20-76)
1410. Townsend, L. W.: HZE Particle Shielding Using Confined Magnetic Fields. Journal of Spacecraft and Rockets, Volume 20, No. 6, November - December 1983, p. 629-631.  
(Subject Category 18 RTOP 199-20-76)
1411. Townsend, L. W.; Bidasaria, H. B.; and Wilson, J. W.: Eikonal Phase Shift Analyses of Carbon-Carbon Scattering. Canadian Journal of Physics, Volume 61, No. 6, June 1983, p. 867-871.  
(Subject Category 73 RTOP 199-20-76)
1412. Wilhite, Alan W.: Optimum Wing Sizing of a Single Stage-to-Orbit Vehicle. Journal of Spacecraft and Rockets, Volume 20, March-April 1983, p. 115-121.  
(Subject Category 16 RTOP 540-03-13)
1413. Zapata, L. E.; and DeYoung, R. J.: Flashlamp-Pumped Iodine Monobromide Laser Characteristics. Journal of Applied Physics, Volume 54, No. 4, April 1983, p. 1686-1692.  
(Subject Category 36 RTOP 506-55-13)
1414. Zoby, E. V.: Comparisons of STS-1 Experimental and Predicted Heating Rates. Journal of Spacecraft and Rockets, Volume 20, No. 3, May-June 1983, p. 214-218.  
(Subject Category 34 RTOP 506-51-33)
1415. Zoby, E. V.: Analysis of STS-2 Experimental Heating Rates and Transition Data. Journal of Spacecraft and Rockets, Volume 20, No. 3, May-June 1983, p. 232-237.  
(Subject Category 34 RTOP 506-51-13)

#### Meeting Presentations

1416. Arrington, J. P.; and Wilhite, Alan W.: Second-Generation Space Shuttle. Presented at the Canaveral Council of Technical Societies, Twentieth Space Congress, April 26-28, 1983, Cocoa Beach, Florida. Proceedings Pending.  
(Subject Category 15 RTOP 506-63-23)
1417. Bidasaria, H. B.; Townsend, L. W.; and Wilson, J. W.: Complex WKB Analyses of Carbon-Carbon Rainbow Scattering. Presented at the 1983 Meeting of the American Physical Society, April 18-21, 1983, Baltimore, Maryland. Proceedings in APS Bulletin Volume 28, No. 4, April 1983, p. 658.  
(Subject Category 73 RTOP 199-20-76)

1418. Bradley, P. F.; Siemers, P. M., III; and Weilmuenster, K. James: An Evaluation of Space Shuttle Orbiter Forward Fuselage Surface Pressures: Comparison With Wind Tunnel and Theoretical Predictions. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0119.  
(Subject Category 18 RTOP 506-51-33)
1419. Calloway, Robert L.: Lateral-Directional Stability Investigation of the Space Shuttle Orbiter at Mach 6. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 34 RTOP 506-51-13)
1420. Compton, Harold R.; Schiess, James R.; Suit, William T.; Scallion, William I.; and Hudgins, JoAnn W.: Stability and Control Over the Supersonic and Hypersonic Speed Range. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 02 RTOP 506-51-13)
1421. DeRyder, Dariene D.; Ferebee, Melvin J., Jr.; and McMillin, Mark L.: Interactive Geometry Modeling of Space Station Conceptual Designs. Presented at the Symposium on Computer-Aided Geometry Modeling, April 20-22, 1983, Hampton, Virginia. In NASA CP-2272.  
(Subject Category 61 RTOP 506-62-43)
1422. DeYoung, R. J.; Tepper, W. D.; Conway, E. J.; and Humes, D. H.: Preliminary Comparison of Laser and Solar Space Power Systems. Presented at the AICHE/IEEE/AIAA/ACS/ANS/ASME/SAE 18th Intersociety Energy Conversion Engineering Conference, August 21-26, 1983, Orlando, Florida. In Proceedings, "Energy for the Marketplace."  
(Subject Category 20 RTOP 506-55-13)
1423. Duckett, Roy J.; and Gilliland, C. S.: Variable Anodic Thermal Control Coating on Aluminum. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1492.  
(Subject Category 18 RTOP 506-63-87)
1424. Eide, Donald G.; and Morris, W. Douglas: Operational Awareness in Future Space Transportation System Concepts and Technology Selection. Presented at the AAS/AIAA Astrodynamics Specialist Conference, August 22-25, 1983, Lake Placid, New York. AAS Paper No. 83-382.  
(Subject Category 16 RTOP 506-53-23)
1425. Eldred, Charles H.: Advanced Civilian Launch Vehicle Concepts. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation System, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 16 RTOP 506-63-23)



1426. Ferebee, Melvin J., Jr.; Garrett, L. B.; and Farmer, Jeffrey T.: Interactive Systems Analysis of a Land Mobile Satellite. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0219.  
(Subject Category 15      RTOP 506-62-43)
1427. Findlay, John T.; Kelly, G. Mel; McConnell, Judy G.; and Compton, Harold R.: Subsonic Longitudinal Performance Coefficient Extraction From Shuttle Flight Data--An Accuracy Assessment for Determination of Data Base Updates. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 01      RTOP 506-51-13)
1428. Garrett, L. Bernard: Thermal Modeling and Analysis of Structurally Complex Spacecraft Using the IDEAS System. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1459.  
(Subject Category 18      RTOP 506-62-23)
1429. Garrett, L. Bernard: Interactive Design and Evaluation of Advanced Spacecraft (IDEAS) Computer-Aided Design System. Presented at the MIT/IEEE Control Systems Society Symposium on Computer-Aided Control System Design, September 28-30, 1983, Cambridge, Massachusetts.  
(Subject Category 65      RTOP 506-62-23)
1430. Garrett, L. Bernard: Mathematical Synthesization of Complex Structures. Presented at the Symposium on Computer-Aided Geometry Modeling, April 20-22, 1983, Hampton, Virginia. In NASA CP-2272.  
(Subject Category 61      RTOP 506-62-23)
1431. Garrett, L. Bernard; and Ferebee, Melvin J., Jr.: Comparative Analysis of Large Antenna Spacecraft Using the IDEAS System. Presented at the AIAA/ASME/ASCE/AHS 24th Structures, Structural Dynamics and Materials Conference, May 2-4, 1983, Lake Tahoe, Nevada. AIAA Paper No. 83-0798-CP.  
(Subject Category 18      RTOP 506-62-43)
1432. Gnoffo, Peter A.: Hypersonic Flows Over Biconics Using a Variable-Effective-Gamma, Parabolized-Navier-Stokes Code. Presented at the AIAA 16th Fluid and Plasma Dynamics Conference, July 12-14, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1666.  
(Subject Category 34      RTOP 506-51-13)
1433. Gupta, R. N.; Gnoffo, P. A.; and MacCormack, R. W.: A Viscous Shock-Layer Flowfield Analysis by an Explicit-Implicit Method. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1423.  
(Subject Category 34      RTOP 506-51-13)
1434. Gupta, R. N.; Moss, J. N.; Simmonds, A. L.; Shinn, J. L.; and Zoby, E. V.: Space Shuttle Heating Analysis With Variation in Angle of Attack and Surface Condition. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0486.  
(Subject Category 34      RTOP 506-51-23)

1435. Heck, Michael L.; Findlay, John T.; and Compton, Harold R.: Aerodynamic Coefficient Identification Package Dynamic Data Accuracy Determinations - Lessons Learned. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 19 RTOP 506-51-13)
1436. Heck, Michael L.; Findlay, John T.; and Compton, Harold R.: Calibration of the Aerodynamic Coefficient Identification Package Measurements From the Shuttle Entry Flights Using Inertial Measurement Unit Data. Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2100.  
(Subject Category 19 RTOP 506-51-13)
1437. Helms, Vernon T., III: Leeward Centerline and Side Fuselage Entry Heating Predictions for the Space Shuttle Orbiter. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 34 RTOP 506-51-13)
1438. Lovelace, U. M.: A Concept for an Advanced Earth Observation Spacecraft. Presented at the IEEE-AESS 1983 National Telesystems Conference, November 14-17, 1983, San Francisco, California. In Proceedings.  
(Subject Category 18 RTOP 506-62-23)
1439. MacConochie, Ian O.; and LeMessurier, Robert W.: Weight Trends for a Fully Reusable Advanced Single-Stage Shuttle. Presented at the 42nd Annual Conference of the Society of Allied Weight Engineers, Inc., May 23-25, 1983, Anaheim, California. SAWE Paper No. 83-1554.  
(Subject Category 18 RTOP 506-63-23)
1440. Martin, James A.: A Shock-Fitting Solution of the Supersonic Flowfield in a Rounded Internal Corner. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0038.  
(Subject Category 02 RTOP 506-51-13)
1441. Martin, James A.: Effects of Tripropellant Engines on Earth-to-Orbit Vehicles. Presented at the AIAA/ASME/SAE 19th Joint Propulsion Conference, June 27-29, 1983, Seattle, Washington. AIAA Paper No. 83-1187.  
(Subject Category 20 RTOP 506-51-13)
1442. Martin, James A.; MacConochie, Ian O.; and Brien, E. P.: Orbit-on-Demand Vehicles. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 16 RTOP 506-63-23)
1443. McFarland, Donald R.; and Lee, Ja H.: Photographic Study of Voltage Breakdown Over an Insulator in a Hypocycloidal Pinch. Presented at the IEEE Region 3 Southeastcon '83 Technical Conference, April 11-14, 1983, Orlando, Florida.  
(Subject Category 75 RTOP 506-55-13)

1444. Miller, C. G.; Blackstock, T. A.; Helms, V. T., III; Midden, R. E.: An Experimental Investigation of Control Surface Effectiveness and Real-Gas Effects for Biconics. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0213. (Subject Category 02 RTOP 506-51-13)
1445. Miller, C. G.; Gnoffo, P. A.; and Micol, J. R.: Heat-Transfer Distributions for Biconics at Incidence in Hypersonic-Hypervelocity Real-Gas Flows. Presented at the 14th International Symposium on Shock Tubes and Waves, August 15-18, 1983, Sydney, Australia. Proceedings Pending. (Subject Category 02 RTOP 506-51-23)
1446. Miller, C. G.; and Jones, J. J.: Development and Performance of the NASA Langley Research Center Expansion Tube/Tunnel, A Hypersonic-Hypervelocity Real-Gas Facility. Presented at the 14th International Symposium on Shock Tubes and Waves, August 15-18, 1983, Sydney, Australia. Proceedings Pending. (Subject Category 09 RTOP 506-51-23)
1447. Miller, Charles G.; Micol, John R.; Gnoffo, Peter A.; and Wilder, Sue E.: Heat Transfer Distributions on Biconics at Incidence in Hypersonic-Hypervelocity He, N<sub>2</sub>, Air, and CO<sub>2</sub> Flows. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1508. (Subject Category 34 RTOP 506-51-13)
1448. Morris, W. D.; Talay, T. A.; and Eide, D. G.: Operations Simulation for the Design of a Future Space Transportation System. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0140. (Subject Category 16 RTOP 506-63-23)
1449. Naftel, J. Chris; and Powell, Richard W.: Ascent Performance and Abort Analysis for a Future Space Transportation System. Presented at the AIAA 10th Atmospheric Flight Mechanics Conference, August 15-17, 1983, Gatlinburg, Tennessee. AIAA Paper No. 83-2112. (Subject Category 15 RTOP 506-63-23)
1450. Nazemetz, John; Sage, Karen; Gates, Ray; and DeRyder, Dariene D.: Geometric Modeling of Large Space Antenna Deployment. Presented at the Symposium on Computer-Aided Geometry Modeling, April 20-22, 1983, Hampton, Virginia. In NASA CP-2272. (Subject Category 61 RTOP 506-62-43)
1451. Outlaw, R. A.; and Heinbockel, J. H.: A Potential Scaling Monte Carlo Simulation of Thin Film Nucleation and Growth. Presented at the 1982 American Vacuum Society/American Society for Metals International Conference on Metallurgical Coatings (Metallurgical Coatings, Process Technology and Thin Film Microelectronics), April 18-22, 1983, San Diego, California. Proceedings Pending. (Subject Category 31 RTOP 506-55-43)

1452. Phillips, W. Pelham; Findlay, John T.; and Compton, Harold R.: Base Drag Determination for STS Flights 1-5. Presented at the AIAA/AHS/IES/SETP 2nd Flight Testing Conference and Technical Display, November 16-18, 1983, Las Vegas, Nevada. AIAA Paper No. 83-2719.  
(Subject Category 15 RTOP 506-51-13)
1453. Price, Joseph M.: Atmosphere Determination for Shuttle Aerodynamic Studies. Presented at the AMS/AIAA Ninth Conference on Aerospace and Aeronautical Meteorology, June 6-9, 1983, Omaha, Nebraska. In Proceedings.  
(Subject Category 18 RTOP 506-51-13)
1454. Scallion, W. I.; Compton, H. R.; Suit, W. T.; Powell, R. W.; Blackstock, T. A.; and Bates, B. L.: Space Shuttle Third Flight (STS-3) Entry RCS Analysis. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0116.  
(Subject Category 18 RTOP 506-51-33)
1455. Shinn, Judy L.; and Jones, Jim J.: Chemical Nonequilibrium Effects on Flowfields for Aeroassist Orbital Transfer Vehicles. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0214.  
(Subject Category 34 RTOP 506-51-23)
1456. Siemers, P. M., III; Bradley, P. F.; Wolf, H.; Flanagan, P. F.; Weilmuenster, K. J.; and Kern, F. A.: Shuttle Flight Pressure Instrumentation: Experience and Lessons for the Future. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 18 RTOP 506-51-33)
1457. Siemers, Paul M., III; Wolf, Henry; and Flanagan, Paul F.: Shuttle Entry Air Data System Concepts Applied to Space Shuttle Orbiter Flight Pressure Data to Determine Air Data - STS 1-4. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0118  
(Subject Category 18 RTOP 506-63-32)
1458. Sivertson, W. E., Jr.; Wilson, R. G.; and Bullock, G. F.: Autonomous Earth Feature Classification - Shuttle and Aircraft Flight Test Results. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0417.  
(Subject Category 43 RTOP 542-03-14)
1459. Talay, Theodore A.; and Morris, W. Douglas: Space Station Orbit Selection. Presented at the AAS/AIAA Astrodynamics Specialist Conference, August 22-25, 1983, Lake Placid, New York. AAS Paper No. 83-345.  
(Subject Category 15 RTOP 506-63-23)
1460. Throckmorton, David A.; and Zoby, E. Vincent: Orbiter Entry Leaside Heat Transfer Data Analysis. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper 83-0484.  
(Subject Category 34 RTOP 506-51-33)

1461. Throckmorton, David A.; Zoby, E. Vincent; and Hamilton, H. Harris, II: Orbiter Catalytic/Noncatalytic Heat Transfer as Evidenced by Heating to Contaminated Surfaces on STS-2 and STS-3. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 34 RTOP 506-51-13)
1462. Townsend, L. W.; Bidasaria, H. B.; and Wilson, J. W.: Complex WKB Solutions for  $^{12}\text{C}+^{12}\text{C}$  Scattering. Presented at the Lawrence Berkeley Laboratory Sixth High Energy Ion Study and Second Workshop on Anomalons, June 28 - July 1, 1983, Berkeley, California.  
(Subject Category 73 RTOP 199-20-76)
1463. Townsend, Lawrence W.; and Wilson, John W.: Space Radiation Protection Methods. Presented at the NASA Space Radiation Effects Workshop, November 16-18, 1983, Houston, Texas. NASA CP Pending.  
(Subject Category 93 RTOP 199-20-76)
1464. Walker, Gilbert H.: Photovoltaic Conversion of Laser to Electrical Power. Presented at the AIChE/IEEE/AIAA/ACS/ANS/ASME/SAE 18th Intersociety Energy Conversion Engineering Conference, August 21-26, 1983, Orlando, Florida. In Proceedings, "Energy for the Marketplace."  
(Subject Category 44 RTOP 506-55-43)
1465. Ware, George M.; Spencer, Bernard, Jr.; and Gentry, L. Raymond: Remotely Driven Model Control Surfaces for Efficient Wind-Tunnel Operations. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0148.  
(Subject Category 14 RTOP 506-51-13)
1466. Ware, George M.; Spencer, Bernard, Jr.; and Gentry, L. Raymond: Remotely Driven Model Control Surfaces for Efficient Wind-Tunnel Operations. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 14 RTOP 506-51-13)
1467. Weilmuenster, K. James: High Angle of Attack Inviscid Flow Calculations Over a Shuttle-Like Vehicle With Comparisons to Flight Data. Presented at the AIAA Applied Aerodynamics Conference, July 13-15, 1983, Danvers, Massachusetts. AIAA Paper No. 83-1798.  
(Subject Category 02 RTOP 506-51-13)
1468. Wells, W. L.: Heating Measurements on Space Shuttle Orbiter Models With Differentially Deflected Elevons. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1534.  
(Subject Category 34 RTOP 506-51-13)
1469. Wilhite, Allan W.; Johnson, Sally C.; and Crisp, Vicki K.: Integrating Computer Programs for Engineering Analysis and Design. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0597.  
(Subject Category 59 RTOP 506-51-13)

1470. Wilson, John W.: Space Radiation Interaction Mechanisms in Materials. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0588.  
(Subject Category 93 RTOP 199-20-76)
1471. Wilson, John W.; and Stock, L. V.: Equivalent Electron Fluence for Solar Proton Damage in GaAs Shallow Junction Cells. Presented at the NASA Lewis Research Center Sixth Space Photovoltaic Research and Technology Meeting, October 18-20, 1983, Cleveland, Ohio. Proceedings Pending.  
(Subject Category 73 RTOP 506-55-43)
1472. Witcofski, Robert D.: Space-Station Crew-Safety Requirements. Presented at the NSIA/AIA/USAF/NASA 1983 Conference and Workshops on Mission Assurance, June 7-9, 1983, Los Angeles, California.  
(Subject Category 15 RTOP 906-54-20)
1473. Woods, W. C., Jr.; Arrington, J. P.; and Hamilton, H. H., II.: A Review of Preflight Estimates of Real-Gas Effects on Space Shuttle Aerodynamic Characteristics. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 34 RTOP 506-51-13)
1474. Wright, Robert L.; DeRyder, Dariene D.; Ferebee, Melvin J., Jr.; and Smith, John C.: Interactive Analysis of a Large Aperture Earth Observations Satellite. Presented at the 42nd Annual Conference of the Society of Allied Weight Engineers, Inc., May 23-25, 1983, Anaheim, California. SAWE Paper No. 1556.  
(Subject Category 18 RTOP 506-62-23)
1475. Wright, Robert L.; DeRyder, Dariene D.; and Palmer, Michael T.: Orbital Thermal Analysis of Lattice Structured Spacecraft Using Color Video Display Techniques. Presented at the AIAA 18th Thermophysics Conference, June 1-3, 1983, Montreal, Canada. AIAA Paper No. 83-1460.  
(Subject Category 18 RTOP 506-62-23)
1476. Wurster, Kathryn E.: Aerothermal Environments for Advanced ETO Transportation Systems. Presented at the NASA Symposium on Recent Advances in TPS and Structures for Future Space Transportation Systems, December 13-15, 1983, Hampton, Virginia. NASA CP Pending.  
(Subject Category 15 RTOP 506-51-13)
1477. Wurster, Kathryn E.; and Zoby, E. Vincent: An Experimental Heat Transfer Investigation of an Advanced Winged Entry Vehicle at Mach 10. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0409.  
(Subject Category 34 RTOP 506-51-13)
1478. Youngblood, James W.; and Jackson, Ray D.: Airborne Reconnaissance in the Civilian Sector: Agricultural Monitoring From High-Altitude Powered Platforms. Presented at the SPIE's 27th Annual International Technical Symposium and Instrument Display, August 21-26, 1983, San Diego, California. SPIE Paper No. 424-24.  
(Subject Category 05 RTOP 505-43-53)

### Technical Talks

1479. Arrington, James P.: Future Space Transportation Systems. Presented at the 1983 NASA/ASEE Summer Faculty Research Program Lecture Series, June 10, 1983, Hampton, Virginia.  
(Subject Category 16 RTOP 506-63-23)
1480. Hall, John B.; and Pickett, Shelby J.: Environmental Control and Life Support-Systems (ECLSS) Technology Assessment for Manned Space Systems. Presented at the 1983 Annual Meeting of the Virginia Academy of Science, May 17-20, 1983, Fairfax, Virginia.  
(Subject Category 54 RTOP 906-54-20)
1481. MacConochie, Ian O.; and Wilson, Maywood L.: Pultrusion Process for Fabrication of Tethers. Presented at the NASA/MSFC Application of Tethers in Space Workshop, June 16, 1983, Williamsburg, Virginia.  
(Subject Category 18 RTOP 506-51-13)
1482. Townsend, L. W.; and Bidasaria, H. B.: Analytic Determinations of Single-Folding Optical Potentials. Presented at the 1983 Spring Meeting of the American Physical Society, April 18-21, 1983, Baltimore, Maryland.  
(Subject Category 73 RTOP 199-20-76)
1483. Townsend, Lawrence W.; and Wilson, John W.: Overview of Space Radiation Protection Methods. Presented at the NASA Space Radiation Effects Workshop, November 16-18, 1983, Houston, Texas.  
(Subject Category 93 RTOP 199-20-76)
1484. Walberg, Gerald D.: Major Space Technology Initiatives Into the Nineties. Presented at the TMSA Conference on World Space Activities Over the Next Decade, October 17-18, 1983, London, England, and October 20-21, 1983, Paris, France.  
(Subject Category 16 RTOP 506-51-13)
1485. Weilmuenster, K. James: Vectorized, Three-Dimensional Flow Field Computations With Application to the Space Shuttle Orbiter. Presented at the SIAM 1983 Fall Meeting, November 7-9, 1983, Norfolk, Virginia.  
(Subject Category 34 RTOP 506-51-13)
1486. Wong, M.; Schimmerling, W.; and Wilson, J. W.: Transport Studies of the Interaction of High-Energy Heavy Ions With Extended Matter. Presented at the International Radiation Research Society Meeting, June 28, 1983, Amsterdam, The Netherlands.  
(Subject Category 73 RTOP 199-20-76)
1487. Youngblood, James W.: High-Altitude, Long-Endurance UVS: NASA Studies of Solar Power. Presented at the National Capital Chapter of the Association for Unmanned Vehicle Systems (AUVS) Symposium on "Status of Unmanned Vehicle Technology and Its Application to Military Problems," April 14, 1983, Laurel, Maryland.  
(Subject Category 05 RTOP 505-43-43)

### Computer Programs

1488. White, Michael J.; and Kolb, William (ARINC Research Corporation): ARCEM: ARINC Research Concept Evaluation Methodology Program. Program No. LAR-13143. Submitted 1983.  
(Subject Category 01)

### Tech Briefs

1489. Ashby, George C., Jr.: Sting-Mounted Flow-Field Survey Apparatus. NASA Tech Brief LAR-13157.
1490. Byvik, Charles E. (Langley Research Center); Buoncristiani, A. M.; and Smith, B. T. (Christopher Newport College): Evaluating Energy Conversion Efficiency. NASA Tech Brief LAR-12948.
1491. Byvik, Charles E. (Langley Research Center); and Reichman, B. (Christopher Newport College): Determining the Point of Zero Zeta Potential in Solid Samples. NASA Tech Brief LAR-12893.
1492. Hohl, Frank (Langley Research Center); and Zang, Thomas A. (College of William and Mary): Two and Three-Dimensional Galaxy Simulations. NASA Tech Brief LAR-12907.
1493. Leondis, A. (General Dynamics Corporation): Simplified Modeling of Tetrahedral Trusses. NASA Tech Brief LAR-12815.
1494. MacConochie, Ian O.; Lawson, Ashby G.; and Kelly, H. Neale: Shell-Tile Thermal-Protection System. NASA Tech Brief LAR-12862.
1495. MacConochie, Ian O.; Lawson, Ashby G.; and Whiteman, Thomas C. (Langley Research Center); and Brien, Evans P. (Kentron International, Inc.): Lightweight Thermal-Protection System. NASA Tech Brief LAR-12880.
1496. Miles, Allen (Southern University); and Byvik, Charles E. (Langley Research Center): Solar-Assisted Oxidation of Toxic Cyanide. NASA Tech Brief LAR-13171.
1497. Outlaw, R. A.; and Baugh, Bill T.: Austere Ultrahigh Vacuum (UHV) Sample Transfer System. NASA Tech Brief LAR-12993.
1498. Outlaw, R. A.; and Baugh, Bill T.: UHV Precision Manipulator Heating and Cooling Assembly. NASA Tech Brief LAR-13040.
1499. Postuchow, Jack R. (Martin Marietta Aerospace): Snake Cord. NASA Tech Brief LAR-13096.
1500. Weaver, Willard R., Jr. (Langley Research Center); and Lee, Ja H. (Vanderbilt University): Sunlight-Pumped Laser. NASA Tech Brief LAR-12870.



## Patents

1501. Grana, David C.; and Inge, Spencer V., Jr.: Vertical Shaft Windmill. U.S. Patent 4,415,311. Issued November 15, 1983.  
(Subject Category 44)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SYSTEMS ENGINEERING AND OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1502. Mason, E. Eugene: A Unique Electric Power Management System or You Can't Manage What You Can't Measure. Presented at the Government Institute's 10th Energy Technology Conference and Exposition, February 28 - March 2, 1983, Washington, DC. Proceedings Pending.  
(Subject Category 44)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

## PUBLICATIONS FOR FABRICATION DIVISION

### Formal Reports

1503. Buckley, John D. (Editor): Metal Matrix, Carbon, and SiC Composites. NASA CP-2291, November 1983, 175 p.  
(Avail: STIF                      Subject Category 24                      RTOP 505-31-53)

### Quick-Release Technical Memorandums

1504. Berry, Robert F., Jr.: Fabrication Division Ultrasonic Inspection Specification for Critically Stressed Components. NASA TM-84625, February 1983, 21 p.  
(Avail: NTIS                      Subject Category 38                      RTOP 505-31-53)

### Contractor Reports

No contractor reports.

### Journal Articles and Other Publications

No journal articles and other publications.

### Meeting Presentations

1505. Yu, C.; Yekrangian, S. A.; and Frizzell, A. W.: Discontinuous MIM Film Chip Arrays as MM Wave and Infrared Detector-Mixer Diodes. Presented at the IEEE-MTTS/IURS/Army Eighth International Conference on Infrared and Millimeter Waves, December 12-17, 1983, Miami Beach, Florida. In Conference Digest.  
(Subject Category 36                      RTOP 506-62-63)

### Technical Talks

No technical talks.

### Computer Programs

No computer programs.

### Tech Briefs

1506. Berry, Robert F., Jr.: Inexpensive Eddy Current Standard. NASA Tech Brief LAR-13154.

- 1507. Bryant, Leland E.; Covington, Edward W., III; Dale, Walter J.; Hall, E. Thomas, Jr.; Justice, James E.; Taylor, Edward C.; and Wilson, Maywood L.: Process Yields Strong, Void-Free Laminates. NASA Tech Brief LAR-12982.
- 1508. Dickerson, G. E.: Process for Molding Nonreinforced (Neat) Resins. NASA Tech Brief LAR-12981.
- 1509. Fleenor, E. N., Jr.: Tooling Converts Stock Bearings to Custom Bearings. NASA Tech Brief LAR-12922.
- 1510. Fox, R. L.; Frizzell, A. W.; Little, B. D.; Progar, D. J.; Coultrip, R. H.; Couch, R. H.; Stein, B. A.; Buckley, J. D.; St. Clair, T. L.; and Gleason, J. R. (Army): Hot-Melt Adhesive Attachment System. NASA Tech Brief LAR-12894.
- 1511. Taylor, Edward C.: Holding Device for Ultrasonic Evaluation of Small Diameter tubes. NASA Tech Brief LAR-13152.

#### Patents

- 1512. Lawson, Ashby G.: Modified Spiral Wound Retaining Ring. U.S. Patent 4,371,301. Issued February 1, 1983.  
(Subject Category 37)

## PUBLICATIONS FOR SYSTEMS ENGINEERING DIVISION

### Formal Reports

1513. Bement, Laurence J.: Practical Small-Scale Explosive Seam Welding. NASA TM-84649, April 1983, 19 p.  
(Avail: NTIS Subject Category 37 RTOP 141-20-10)
1514. Bement, Laurence J.; Kayser, Eleonore G.; and Schimmel, Morry L.: Service Life Evaluation of Rigid Explosive Transfer Lines. NASA TP-2143, August 1983, 56 p.  
(Avail: NTIS Subject Category 05 RTOP 505-42-39)
1515. Petley, D. H.; Smith, D. M.; Edwards, C. L. W.; and Carlson, A. B.: Analysis of Gap Heating Due to Stepped Tiles in the Shuttle Thermal Protection System. NASA TP-2209, August 1983, 99 p.  
(Avail: NTIS Subject Category 18 RTOP 986-15-10)
1516. Young, Clarence P., Jr.; and Gloss, Blair B. (Compilers): Cryogenic Wind Tunnel Models - Design and Fabrication. NASA CP-2262, March 1983, 266 p.  
(Avail: NTIS Subject Category 09 RTOP 505-31-53)

### Quick-Release Technical Memorandums

1517. Jones, Thomas C.; Lucy, Melvin H.; and Shearer, Richard L.: Long Duration Exposure Facility (LDEF) Structural Verification Test Report. NASA TM-85672, June 1983, 72 p.  
(Avail: NTIS Subject Category 39 RTOP 542-04-13)

### Contractor Reports

1518. Van Ausdal, Robert K.: Design, Manufacture and Test of a Prototype Powered Wheel for Aircraft. (NAS1-13787 Bendix Corporation.) NASA CR-172242, August 1983, 308 p.  
(Avail: STIF Subject Category 05 RTOP 513-52-01)
1519. Wigley, D. A.: The Dimensional Stability Analysis of Seventeen Stepped Specimens of 18Ni 200 Grade, PH13-8Mo, and A-286. (NAS1-16000 Kentron International, Inc.) NASA CR-172168, August 1983, 59 p.  
(Avail: NTIS Subject Category 26 RTOP 505-31-53)

### Journal Articles and Other Publications

1520. Bement, Laurence J.: Practical Small-Scale Explosive Seam Welding. Mechanical Engineering, Volume 105, No. 9, September 1983, p. 53-59.  
(Subject Category 37 RTOP 141-20-10)

1521. \*Boen, James M.; and Bement, Laurence J.: How to Evaluate Service Life of Explosive Components. Astronautics and Aeronautics, Volume 21, No. 4, April 1983, p. 76-77.  
(Subject Category 03 RTOP 505-32-49)
1522. Greene, Robert F., Jr.: Thermal Design and Experiment Thermal Integration of the Long Duration Exposure Facility. Progress in Astronautics and Aeronautics, Volume 86, 1983, p. 71-88.  
(Subject Category 18 RTOP 542-04-13)
1523. Klich, Phillip J.; and Cockrell, Charles E.: Mechanical Properties of a Fiberglass Prepreg System at Cryogenic and Other Temperatures. AIAA Journal, Volume 21, No. 12, December 1983, p. 1722-1728.  
(Subject Category 27 RTOP 505-31-63)

#### Meeting Presentations

1524. Ahl, Elvin L., Jr.: Securing Mechanism for the Deployable Column of the Hoop/Column Antenna. Presented at the 17th Aerospace Mechanisms Symposium, May 5-6, 1983, Pasadena, California. In NASA CP-2273.  
(Subject Category 37 RTOP 506-53-43)
1525. Bement, Laurence J.: Practical Small-Scale Explosive Seam Welding. Presented at the 17th Aerospace Mechanisms Symposium, May 5-6, 1983, Pasadena, California. In NASA CP-2273.  
(Subject Category 37 RTOP 141-20-10)
1526. Gowdey, Joe C.: Comments on "The Original Design and Current Efforts at LaRC." Presented at the OAST Integrated Flywheel Technology Workshop, August 2-3, 1983, Greenbelt, Maryland. In NASA CP 2290.  
(Subject Category 20 RTOP 506-57-13)
1527. Gustafson, John C.: Control of Large Thermal Distortions in a Cryogenic Wind Tunnel. Presented at the 17th Aerospace Mechanisms Symposium, May 5-6, 1983, Pasadena, California. In NASA CP-2273.  
(Subject Category 39 RTOP 023-25-03)
1528. Petley, D. H.; Smith, D. M.; Edwards, C. L. W.; Patten, A. B.; and Hamilton, H. H., II: Filler Bar Heating Due to Stepped Tiles in the Shuttle Orbiter Thermal Protection System. Presented at the Langley Conference on Shuttle Performance: Lessons Learned, March 8-10, 1983, Hampton, Virginia. In NASA CP-2283.  
(Subject Category 34 RTOP 505-31-63)

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\*Army Structures Laboratory, USARTL (AVRADCOM)

1529. Smith, D. M.; Petley, D. H.; Edwards, C. L. W.; and Patten, A. B.: An Investigation of Gap Heating Due to Stepped Tiles in Zero Pressure Gradient Regions of the Shuttle Orbiter Thermal Protection System. Presented at the AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983, Reno, Nevada. AIAA Paper No. 83-0120.  
(Subject Category 16 RTOP 505-31-63)
1530. Stalnaker, Winifred A.: Interactive Modeling Using the PATRAN-G Program. Presented at the Symposium on Computer-Aided Geometry Modeling, April 20-22, 1983, Hampton, Virginia. In NASA CP-2272.  
(Subject Category 60 RTOP 505-31-53)
1531. Wigley, D. A.; Cockrell, C. E.; and Firth, G. C.: The Use of Stepped Specimens for the Study of Thermally and Mechanically Induced Warpage. Presented at the 1983 Cryogenic Engineering Conference and International Cryogenic Materials Conference, August 15-19, 1983, Colorado Springs, Colorado. In Proceedings, "Advances in Cryogenic Engineering."  
(Subject Category 26 RTOP 505-31-53)

#### Technical Talks

1532. Young, C. P., Jr.: Cryogenic Model Technology. Presented at the NASA National Transonic Facility Research Symposium, December 5, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)
1533. Young, C. P., Jr.: Cryogenic Technology Model Development. Presented at the NASA/ASEE Summer Faculty Research Program Lecture Series, June 23, 1983, Hampton, Virginia.  
(Subject Category 09 RTOP 505-31-53)

#### Computer Programs

No computer programs.

#### Tech Briefs

1534. Bement, Laurence J.: Explosively Welded Joining Method for Remote Applications. NASA Tech Brief LAR-13119.
1535. Bement, Laurence J. (Langley Research Center); and Bailey, James W. (Kentron International, Inc.): Explosive Joining for Nuclear-Reactor Repair. NASA Tech Brief LAR-12996.
1536. Crossley, Edward A.; Haynes, David P.; Jones, Howard C.; and Jones, Irby W.: Adjustable Mount for Electro-Optic Transducers in an Evacuated Cryogenic System. NASA Tech Brief LAR-13100.
1537. Long, Moses J.: Inexpensive Bolt-Load Gage. NASA Tech Brief LAR-12774.

1538. Lucy, Melvin H.: Self-Alining Quick-Connect Joint. NASA Tech Brief LAR-12711.
1539. Lucy, Melvin H.: Retractable Actuator Assembly Exhibiting Low-Shock. NASA Tech Brief LAR-13198.
1540. Lucy, Melvin H.: Miniature Solid Rocket Motor. NASA Tech Brief LAR-13199.

#### Patents

1541. Averill, Robert D.: Vibration Isolation and Pressure Compensation Apparatus for Sensitive Instrumentation. U.S. Patent 4,394,819. Issued July 26, 1983.  
(Subject Category 35)
1542. Bement, Laurence J.; and Bailey, James W.: Explosively Activated Egress Area. U.S. Patent 4,407,468. Issued October 4, 1983.  
(Subject Category 03)
1543. Gilliland, Charles S.; and Duckett, Roy J.: Variable Anodic Thermal Control Coating. U.S. Patent 4,397,716. Issued August 9, 1983.  
(Subject Category 44)



## PUBLICATIONS FOR FACILITIES ENGINEERING DIVISION

### Formal Reports

No formal reports.

### Quick-Release Technical Memorandums

1544. Hudson, C. Michael; and Ramsey, James W., Jr.: Pressure System Recertification at NASA-Langley Research Center. NASA TM-85733, December 1983, 15 p.  
(Avail: NTIS                      Subject Category 37                      RTOP 023-22-00)
1545. Jensen, Ronald N.; Henninger, Robert H.; and Miner, David L.: NECAP 4.1 - NASA's Energy-Cost Analysis Program User's Manual. NASA TM-83238, July 1983, 268 p.  
(Avail: NTIS                      Subject Category 44                      RTOP 992-24-01)

### Contractor Reports

No contractor reports.

### Journal Articles and Other Publications

No journal articles and other publications.

### Meeting Presentations

1546. Chung, B. T. F.; and Thompson, J. E.: Heat Transfer in a Gray Tube With Forced Convection, Internal Radiation and Axial Wall Conduction. Presented at the 1983 ASME Winter Annual Meeting, November 13-18, 1983, Boston, Massachusetts. ASME Paper No. 83-WA/HT-92. Proceedings Pending.  
(Subject Category 34                      RTOP 506-53-53)

### Technical Talks

No technical talks.

### Computer Programs

No computer programs.

### Tech Briefs

No tech briefs.

PUBLICATIONS FOR OPERATIONS SUPPORT DIVISION

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

1547. \*Bayless, Gary B.: Parachute Line Hook Includes Integral Loop Expander.  
NASA Tech Brief LAR-12875.
1548. Cole, Kenneth N.: Differential Temperature Control of Electrical Heaters.  
NASA Tech Brief LAR-13047.
1549. Gardner, Mickey R.: Spring-Loaded Transducer Holder. NASA Tech Brief  
LAR-13048.

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\*Army Structures Laboratory, USARTL (AVRADCOM)

1550. Kiss, James J.; \*Farley, Gary L.; and \*Baker, Donald J.: Shear Panel Test Fixture. NASA Tech Brief LAR-12930.
1551. McSmith, Dwight G.; and Richardson, James I.: Tubing Cutter Is Activated Hydraulically. NASA Tech Brief LAR-12786.
1552. Ward, Stanley W.: Self-Contained Communication Headgear With Protective Features. NASA Tech Brief LAR-13156.

#### Patents

No patents.

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\*Army Structures Laboratory, USARTL (AVRADCOM)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

1553. Research Information and Applications Division (Compiler): Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1982. NASA TM-84615, June 1983, 216 p.  
(Avail: NTIS Subject Category 82)

Contractor Reports

1554. Rouse, Doris: Applications of Aerospace Technology in Biology and Medicine. (NAS1-16177 Research Triangle Institute.) NASA CR-166100, March 1983, 119 p.  
(Avail: IAC Subject Category 52 RTOP 141-20-21)

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1555. Pinelli, Thomas E.; Cordle, Virginia M.; and Vondran, Raymond F.: Survey of Usage of Technical Report Components to Establish Their Most Effective Organization. Presented at the 30th International Technical Communication Conference, May 4, 1983, St. Louis, Missouri. In Proceedings.  
(Subject Category 82)

Technical Talks

1556. Rose, Lester J.: Spin-Offs From Aerospace Technology. Presented at the Society of Manufacturing Engineers, Hampton Roads Chapter 217 Meeting, April 13, 1983, Hampton, Virginia.  
(Subject Category 99)
1557. Rose, Lester J.: Space Technology--Everyday Application. Presented at the 59th Annual Joint Meeting of the Virginia Engineering and Technical Societies, May 13-14, 1983, Williamsburg, Virginia.  
(Subject Category 99)

#### Computer Programs

No computer programs.

#### Tech Briefs

1558. Bionetics Corporation: Controlling Industrial Noise. NASA Tech Brief LAR-13001.

1559. Harrison, Ernest, Jr. (Mississippi Methodist Rehabilitation Center): Connector for Composite Tubes. NASA Tech Brief LAR-12744.

#### Patents

No patents.

PUBLICATIONS FOR ARMY STRUCTURES LABORATORY, USARTL (AVRADCOM)

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

1560. Duh, J.; and Miao, W.: Development of Monofilar Rotor Hud Vibration Absorber. (NAS1-16700 United Technologies Corporation.) NASA CR-166088, May 1983, 90 p.  
(Avail: NTIS                      Subject Category 39                      RTOP 505-10-39)

Journal Articles and Other Publications

1561. Bartlett, Felton D., Jr.: Flight Vibration Optimization Via Conformal Mapping. American Helicopter Society Journal, Volume 28, No. 1, January 1983, p. 49-55.  
(Subject Category 39                      RTOP 505-42-39)

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

## APPENDIX

### INDUSTRIAL APPLICATIONS CENTERS

Aerospace Research Applications Center  
Indianapolis Center for Advanced Research  
1201 East 38th Street  
P. O. Box 647  
Indianapolis, IN 46223  
(317) 264-4644

Kerr Industrial Applications Center  
Southeastern Oklahoma State University  
Station A, Box 2584  
Durant, OK 74701  
(405) 924-6822

NASA Industrial Applications Center  
710 LIS Building  
University of Pittsburgh  
Pittsburgh, PA 15260  
(412) 624-5211

NASA Industrial Applications Center  
University of Southern California  
Research Annex, Room 200  
3716 South Hope Street  
Los Angeles, CA 90007  
(213) 743-6132

New England Research Applications Center  
Mansfield Professional Park  
Storrs, CT 06268  
(203) 486-4533

North Carolina Science and Technology Research Center  
Post Office Box 12235  
Research Triangle Park, NC 27709  
(919) 549-0671

Technology Applications Center  
University of New Mexico  
Albuquerque, NM 87131  
(505) 277-3622

NASA/Florida State Technology Applications Center  
State University System of Florida  
500 Weil Hall  
Gainesville, FL 32611  
(904) 392-6626

NASA/UK Technology Applications Program  
University of Kentucky  
109 Kinkead Hall  
Lexington, KY 40506  
(606) 257-6322



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